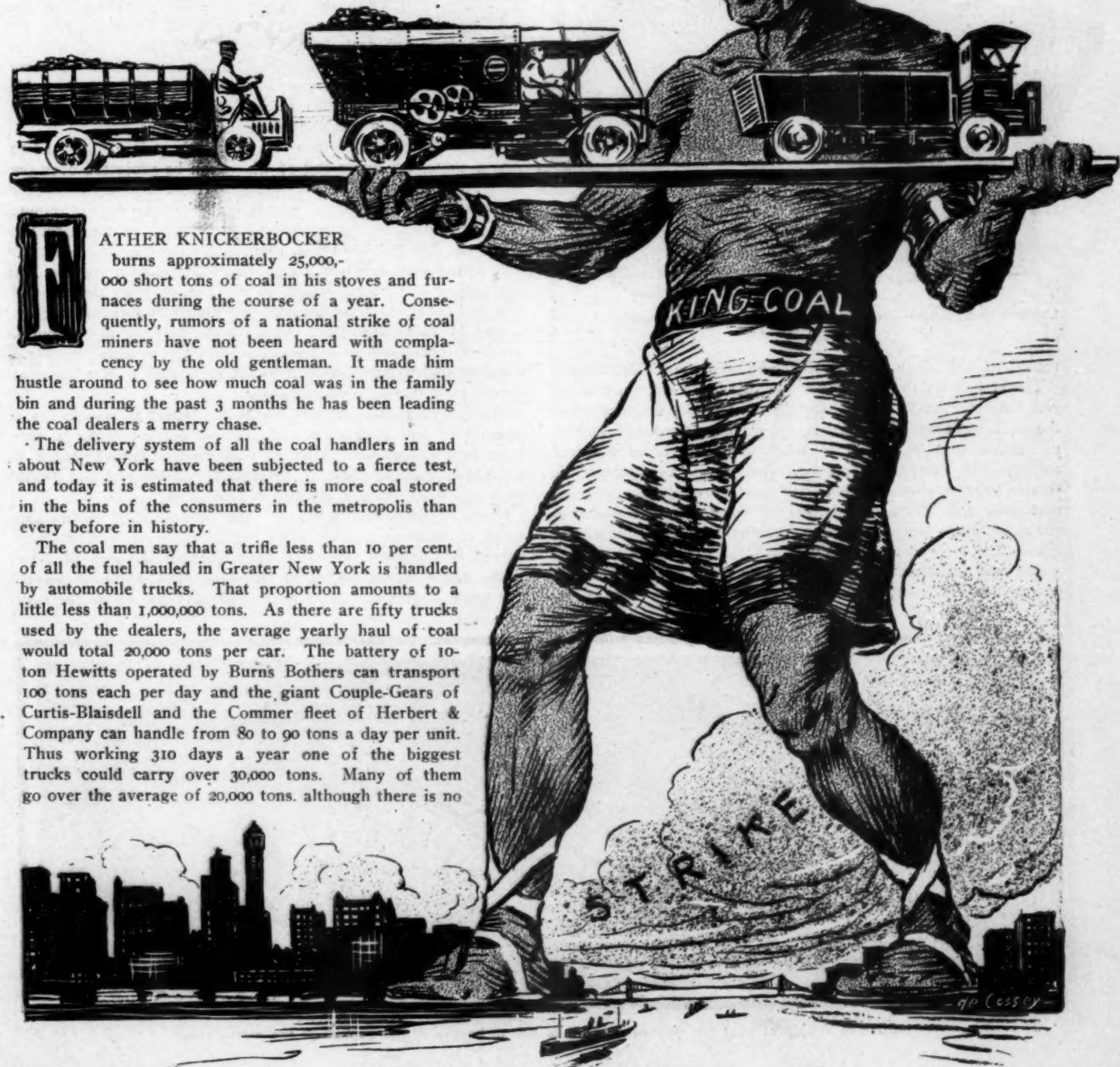


THE AUTOMOBILE

Trucks—Safety Factor in Shadow of Strike



FATHER KNICKERBOCKER burns approximately 25,000,000 short tons of coal in his stoves and furnaces during the course of a year. Consequently, rumors of a national strike of coal miners have not been heard with complacency by the old gentleman. It made him hustle around to see how much coal was in the family bin and during the past 3 months he has been leading the coal dealers a merry chase.

The delivery system of all the coal handlers in and about New York have been subjected to a fierce test, and today it is estimated that there is more coal stored in the bins of the consumers in the metropolis than every before in history.

The coal men say that a trifle less than 10 per cent. of all the fuel hauled in Greater New York is handled by automobile trucks. That proportion amounts to a little less than 1,000,000 tons. As there are fifty trucks used by the dealers, the average yearly haul of coal would total 20,000 tons per car. The battery of 10-ton Hewitts operated by Burns Brothers can transport 100 tons each per day and the giant Couple-Gears of Curtis-Blaisdell and the Commer fleet of Herbert & Company can handle from 80 to 90 tons a day per unit. Thus working 310 days a year one of the biggest trucks could carry over 30,000 tons. Many of them go over the average of 20,000 tons, although there is no



Loading an automobile truck from an outside hopper in the Farrell pocket

record of any single car approaching the maximum figures.

The reason for this lies in the fact that there are times in the year when the trucks are laid up. In summer, for instance, when the office buildings which obtain power from a feed wire require no heating, there is no call for heavy quick service of that type and the coal companies frequently cut down their automobile service to the minimum. But when such torrid spells as the one that made New York swelter last July come along the coal men put their whole truck fleets into commission to save the horses from death in the humid heat.

The coal men lost few horses during that trying period last year, but they certainly gave their automobiles some extra work.

The average daily consumption of coal in the city in July is about 68,000 tons. Of this fully 20,000 tons is taken by steamers, etc., and requires little or no hauling. The remainder has to be hauled, and for 10 days in July forty-one automobiles worked night and day to save the horses the killing job.

In winter, or, in fact, at any time from October 1 to April 1, the coal consumption averages 92,000 tons a day, on a basis of 6 days a week, and the proportion handled by automobiles reaches 3,333 tons a day for weeks together. In the severe weather of the past season there were a few days when the total automobile haul touched 4,000 tons.

In considering figures on coal consumption of New York it should be remembered that 7,000,000 tons a year are used to fill the bunkers of steamships and that fully 3,000,000 tons are delivered in such a way by rail or water that cartage is not required. At least 5,000,000 tons a year is handled by the consumers themselves. This leaves 10,000,000 tons to be delivered by the dealers and the automobile truck handles 1,000,000 tons.

Water Front Lined With Depots

Starting at a point opposite Fort Lee on the North river and going clear around the Battery and up the East river to the Bronx there are coal depots. Each is equipped with what is known in the industry as a coal pocket into which conveyor machinery dumps the cargoes of coal barges moored alongside the pocket. It passes over screens of various sizes by gravity and is deposited in magazines according to size.

At the lower end of these magazines there is a gate leading into a chute, the lower end of which can be projected over the edge of the truck that is to be loaded. It is not an instantaneous process to load a truck. It requires all the way from 1 minute to 6, depending on the condition of the coal. In cold weather, when the coal has been wet, there is always the chance that it will freeze solid between loads. In such a case it requires the services of a vigorous knight of the pick to start the flow of coal and occasionally as much as 30 minutes is spent in loading. Under favorable conditions the truck can be filled in 2 minutes, which is considered good average work. The process of loading could be slightly accelerated if a man were used to trim the coal evenly as it flowed from the chute.

The largest coal pocket on Manhattan Island at present has a capacity of less than 2,500 tons. These pockets range in size from nearly 2,500 tons down to 1,000 tons. Curtis-Blaisdell is building a massive plant at Ninety-sixth street and the North river which will have a capacity of 6,000 tons.

Burns Brothers, Curtis-Blaisdell and Herbert have pockets and docks at intervals on the North and East rivers, and William Farrell & Company, operating the municipal business of New York, has a model pocket at the foot of Christopher street.

It has a double system of loading chutes; one inside the run-



Two days supply of coal for William Farrell & Son in barges at the pocket on the North river



Loading buckwheat coal at the Jersey City yards of Burns Brothers

ways and the other outside the tunnels. The trucks and wagons to be loaded may take their cargoes aboard from the top of the runway, which forms the bottom of the magazine, or may range along outside and receive the load from one of the exterior chutes. Each magazine may contain a different size or grade of coal, the distribution being made by gravity screens or screening devices operated with an oscillatory motion to accelerate the distribution.

All the coal pockets in New York are of the overhead type arranged to receive their supplies directly from the barges or from freight cars run into them and unloaded by automatic dumping devices.

There are two chief methods used in unloading the barges. The more usual is by a belt conveyor equipped with buckets which may be let down into the hold of the barge and adjusted to various positions. The loading of the buckets has to be done largely by hand. The other method is the automatic grab, operated by mast and gaff with steam or electric power. The grab works something on the principle of the steam dredge or shovel used in excavation work like the Panama Canal and other big diggings. The bucket, with its bottom divided like a pair of jaws, is dropped into the coal cargo and closed by power. It is then raised by cable, running through a pulley at the peak of the gaff, and swung over the spot in the pocket where the coal can be distributed. The jaws open and the bucket parts in the middle of the bottom, allowing 500 pounds or more of coal to go rattling down the screens. Many of the big coal users in New York have their own equipment for handling boat loads.

Loading Scheme Not Well Adapted

The companies figure 15 minutes for loading, 15 minutes for unloading, 30 minutes for going and returning. Each unit is supposed to make ten trips a day, covering an average of 20 miles. This is admitted to be too high for the horse equipment and too low for the automobiles, but the average is maintained by giving the horses the shorter hauls and selecting the automobiles to do the heavy work where possible.

Accepted practice in loading was evolved from conditions applying alone to horse-drawn equipment and as a consequence the utmost service from the automobile is impossible. While the automobile unit handles vastly more coal than the horse-drawn unit of transportation, the automobiles are so few and the horse wagons so many that the former is hampered in doing its work.

During the busy hour at any of the New York pockets, which, by the way, has been almost any hour in the day until very re-

cently, there will be found a string of coal carts and automobile trucks waiting to be loaded. The horses move slowly and there is a tendency toward congestion in the runways. Where there are several chutes, working the blockades caused by the horse wagons are often serious matters.

The average coal haul on Manhattan Island is only a little over 1 mile. Many are but 200 yards, and a large number measure only a block or two. The experience of the coal men has demonstrated that for short hauls with light loads the horse has something to be said in his favor.

In apportioning the work of delivery the coal merchant selects all the favored work—short, easy hauls and small orders—for the horse section of his system. If there is a tough hill, a long heavy haul, a particularly deep and impassable street the power wagon gets the job. As Superintendent J. P. Geagan, of the Curtis-Blaisdell Company, says: "And it does not show on the records."

As an indication of this phase of the business it may be cited that officially the cost of transportation, ton for ton, according to the records of the coal companies of New York, is not far from 40 cents a ton, no matter what the means of delivery.

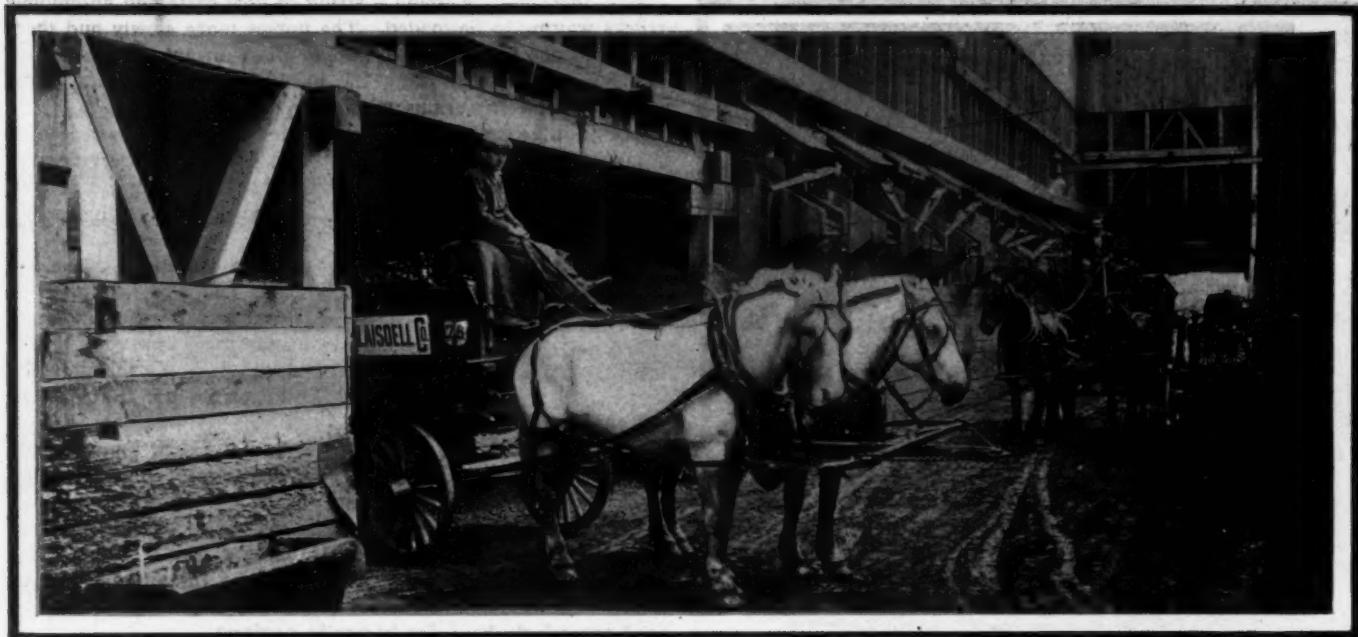
In explaining this showing, Mr. Geagan said: "The horse equipment gets all the short, easy work and the automobiles get what is left and nothing much remains that would not be reckoned excessively hard for horses to perform.

"The records do not show that the automobile had to work on worse streets, grades and pavements than the horses. They do not show how many times the automobiles pulled wagons out of bad sink-holes, or how often they worked under almost impossible street conditions, such as obtain sometimes after a storm of sleet or rain.

"Nevertheless, the cost of handling coal by the automobile



Coal grab capable of carrying sixty-five loads an hour, each of 1½ tons—Farrell pocket



Three wagons in loading runway; two are on scales and three others are waiting to load—congestion

equals ton for ton similar costs in the horse department. It is no secret that I have almost determined to abandon our horses sometime in the near future and install an exclusive battery of power-propelled vehicles."

One of the most trying circumstances about coal handling in the metropolis is unloading. Of course, the day of the shovel as the main reliance of coal delivery is happily past, but there are still numerous disagreeable factors in the situation. First

too small. In the second place, the storage space in the bins is limited. With a gravity chute and a coal hole close to the curb or easily available in some other position, it is comparatively simple to unload a small amount of coal, but conditions would be vastly improved if the size of the coal hole were enlarged and the bin capacity increased. The small coal holes now in use are a serious handicap in rapid delivery.

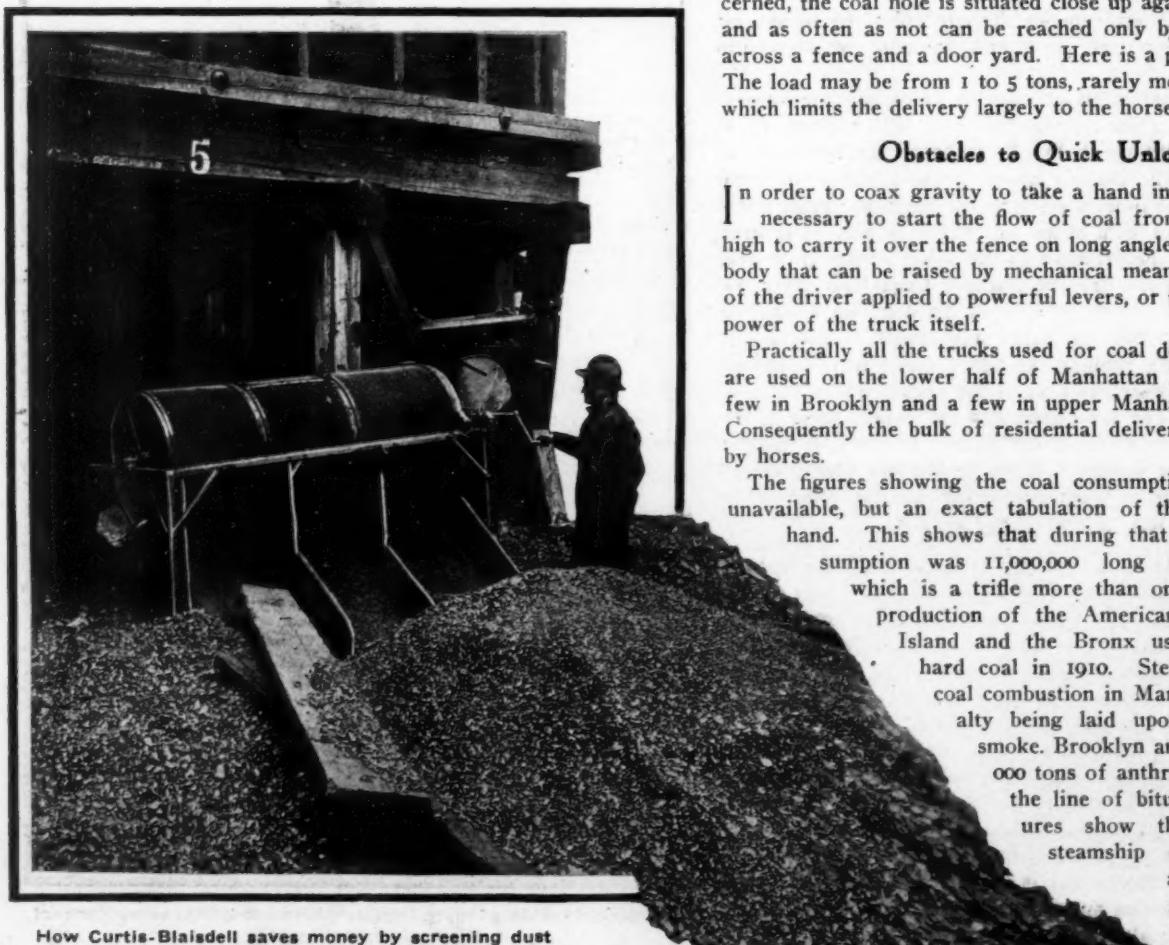
In a majority of cases, as far as the residential section is concerned, the coal hole is situated close up against the house itself, and as often as not can be reached only by carrying the chute across a fence and a door yard. Here is a problem sure enough. The load may be from 1 to 5 tons, rarely more in a single order, which limits the delivery largely to the horse wagons.

Obstacles to Quick Unloading

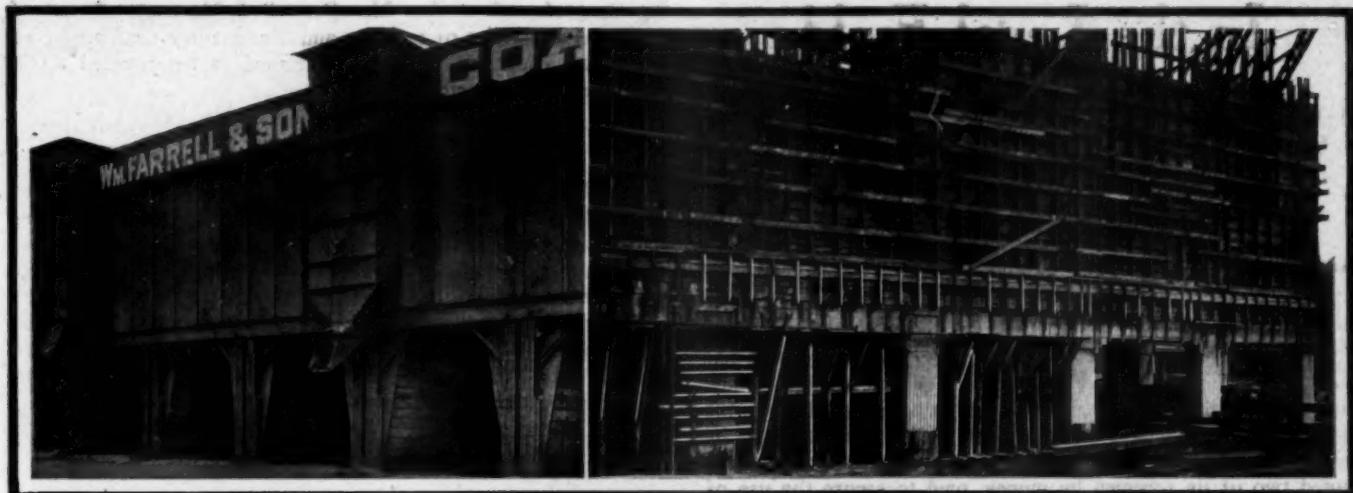
In order to coax gravity to take a hand in such unloading it is necessary to start the flow of coal from a point sufficiently high to carry it over the fence on long angle. This means a truck body that can be raised by mechanical means, either the muscles of the driver applied to powerful levers, or the main or auxiliary power of the truck itself.

Practically all the trucks used for coal delivery in New York are used on the lower half of Manhattan Island. There are a few in Brooklyn and a few in upper Manhattan and the Bronx. Consequently the bulk of residential delivery is done at present by horses.

The figures showing the coal consumption of 1911 are still unavailable, but an exact tabulation of the 1910 figures is at hand. This shows that during that year the total consumption was 11,000,000 long tons of anthracite, which is a trifle more than one-eighth of the total production of the American mines. Manhattan Island and the Bronx used 6,550,000 tons of hard coal in 1910. Steam is made by hard coal combustion in Manhattan, a severe penalty being laid upon the production of smoke. Brooklyn and Queens took 4,350,000 tons of anthracite in that year. In the line of bituminous coal, the figures show that aside from the steamship demands, Manhattan and the Bronx took 2,087,000 tons and Brooklyn and Queens,



How Curtis-Blaisdell saves money by screening dust and refuse that formerly was wasted



Street side of Farrell pocket, showing coal chutes of two patterns in use, where nine wagons may be loaded at once. Curtis-Blaisdell is building a pocket with 6000 tons capacity, anticipating the motorization of its delivery system

1,350,000 tons. Besides these items there were 225,000 loads of coke consumed.

On a basis of 2,000 pounds to the ton and excluding the coke from consideration, this gives a total of 21,544,000 tons of fuel.

In 1911 the total coal production of the country increased 16 per cent., and it is reasonable to suppose that the consumption of New York kept pace with the increase, which would bring the total amount of coal used in New York last year to 25,000,000 tons.

Under the figures of 1910 the anthracite was distributed as follows:

Residences, small stores, etc.	25 per cent.
Apartment houses, etc.	33 per cent.
Hotels, factories, clubs, etc.	10 per cent.
Gas and electric plants	10 per cent.
Department stores, office buildings	10 per cent.
Elevated, subway and surface cars	4 per cent.
Tugs, etc., and railroad heating	4 per cent.
Municipal requirements	4 per cent.

The bituminous coal was distributed as follows:

Steam, gas and refineries	25 per cent.
Steamships	50 per cent.
Elevated, subway and surface cars	17 per cent.
Stores and offices	5 per cent.
Blacksmithing	2 per cent.
Municipal	1 per cent.

Small User Is Well Supplied

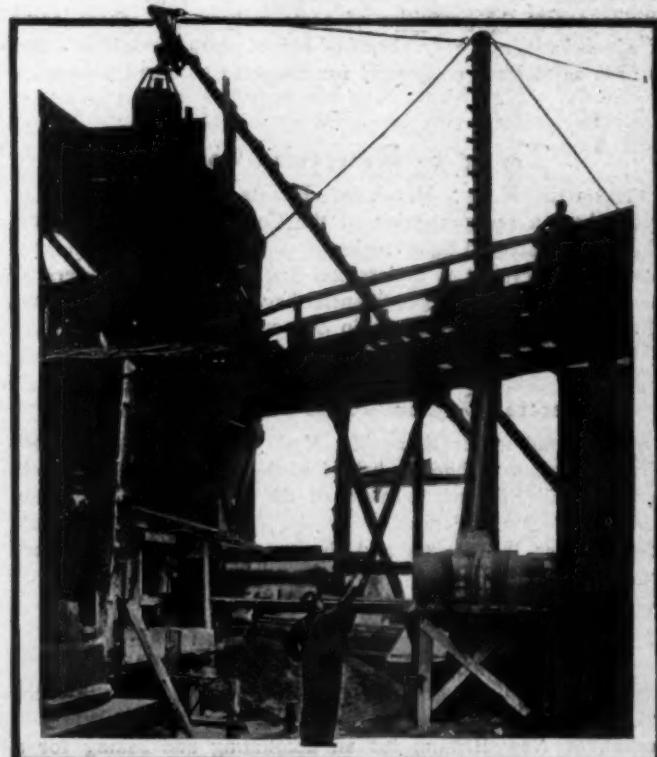
There is no such thing as a material stock of coal in reserve in the hands of the dealers. There are seventeen coal pockets along the waterfront of Manhattan and various depots in Brooklyn, the largest of which is the yard of Burns Brothers. These have a total capacity about 20 per cent. larger than the maximum daily needs of the city. There is a constant stream of coal barges trending between the pockets and shipping points. Anything like an accumulation of coal is impossible under the circumstances. New York is literally living from hand to mouth as far as her fuel is concerned.

The small user did not relish the idea of a strike coming along and catching him with the domestic bin empty. He has been in the market for several months and it is estimated by well-informed coal merchants he is holding over 200,000 tons of anthracite at present and will have no use for it until next fall. As a general thing the consumers have been busy buying coal and the bunkers are pretty full all over town. This factor, however, is not material as it affects individuals, but does represent a large amount in gross.

The trend of the times is toward the automobile truck in the

handling of coal. With all the worst of the work assignments the power-propelled vehicles make an excellent showing in delivery work. It was only a few years ago when the cartage of coal was figured at a minimum of 50 cents a ton. Since the automobile has been adopted to some extent the cost has been reduced to cents a ton under the figures that were formerly considered minimum. This has happened through the removal of the most difficult hauling jobs from the horses, allowing that type of delivery to be done more efficiently and cheaply than ever before. The hard, costly work has been done by the automobiles at the same rate of cost that the horses now accomplish the easy hauls.

Figuring the saving in cartage at 10 cents a ton since the introduction of automobiles the total yearly economy amounts to fully \$1,000,000. This sum of money would serve to install four times as many automobiles as are now in use for coal delivery and in 2 years could replace the whole horse equipment in the New York coal business.



Ton grab and hopper (to left) at Curtis-Blaisdell plant, showing cable cars for distributing to big pocket

In the Legal Field

Studebakers Push Bribery Charge Against Varnish Salesman—Atlas Take Appeal From Weed Injunction

Another Dyer License Granted—Receiver Asked for I. & F. Company

DETROIT, MICH., April 1—The motor car colony here has been much interested in the developments which have attended the police court examination of Robert Brown, the varnish salesman, who is facing a charge of bribery, brought by the Studebaker Corporation which claims that Brown has corrupted two of its foremen by money, paid to secure the use of Brown's varnish in the Studebaker shops.

The evidence appears to have been carefully prepared by the automobile company's law department and has brought out a number of interesting facts.

According to the admissions of several witnesses, it is customary for paint and varnish salesmen to use money in securing contracts. So general is the practice that, according to one witness, paint companies have one price for goods where it is necessary to take care of one foreman, with another price in case it is necessary to do business with two.

The defense brought out as many of these admissions as did the prosecution. In fact, it seemed to be the purpose of Brown's attorneys to try to excuse his offense on the ground of general practice, rather than to enter any denial of the charges.

The proceedings have been brought under an unused law which many well-informed persons did not know to be in existence. It prohibits rigidly the giving or accepting of any bribe or gratuity, offered and accepted with corrupt intent. The wording of the law makes it so difficult to draw the line between tokens of esteem and gifts to corrupt that it is doubtful if any of the big companies' purchasing agents will longer feel at liberty to accept the gratuities of parts makers and others, some of whom have been very liberal of recent years, though in a way so open as to leave no ground for suspicion of corrupt intent.

Trying to Reorganize Cortland

PITTSFIELD, MASS., March 29—Efforts are being made to bring about a reorganization of the Cortland Motor Company, which manufactured light trucks for a short time and then went into bankruptcy. It is understood that some of the officers of the company expect to get financial backing and that operations will be continued somewhere in or near Boston.

Isotta Owner Takes Dyer License

Suit entered in March against Mrs. Sara C. Bronson, owner of an Isotta automobile, on behalf of the Enterprise Automobile Company, alleging infringement of the Dyer patents, has been dismissed. Mrs. Bronson took out an individual owner's license under the patents and the proceedings in equity were dropped against her.

Ask Receiver for I. & F. Company

NEW HAVEN, CONN., March 29—Charles E. Bunnell and Richard F. Bradley, of this city, have brought suit against Willis P. Corbin, of New Britain, for an accounting and asking for a receiver of the defunct I. & F. Motor Car Company, which was organized to build motor cars in Bradford. The company was floated with a stock issue of \$100,000 in \$1 shares, \$49,000 be-

ing in preferred stock. Mr. Bunnell holds 2,794 shares of preferred and 20,250 of common and Mr. Bradley 1,458 preferred and 20,250 common. The assets seemed to be summed up in choses in action worth \$568.

Trustee Wants to Sell Property

GLASTONBURY, CONN., March 29—Thomas J. O'Brien, trustee of the bankrupt estate of the Harriman Motor Works Company, has applied to George A. Kellogg, United States referee in bankruptcy, for permission to sell the machinery and tools of the company that are in his possession. He has been offered \$1,200 and the person making it agrees to pay that sum and take the property subject to the mortgages and other incumbrances that are on it. A meeting of the creditors has been called to pass on the matter.

Creditors After Findlay Assets

TOLEDO, O., April 1—Bankruptcy proceedings against the Findlay Motor Company were marked today by the issuance of an order to show cause why the assets of the company should not be sold to satisfy the claims of creditors and to liquidate two receiver's certificates issued last year to the National Exchange Bank and to the American District Steam Company respectively for \$2,575 and \$7,806.

The receiver's certificates went to protest and the holders of the instruments entered suit. The court order calls for a meeting of those interested April 6.

Atlas Appeals from Injunction

Appeal has been taken by the Atlas Chain Company of Brooklyn from the decision of the United States District Court which upheld the motion of the Weed Chain Tire Grip Company for a preliminary injunction against the manufacture and sale of Atlas chains, on the ground that the chains in question were infringe-

S. A. E. Discusses Lubrication

The meeting of the Metropolitan Section of the Society of Automobile Engineers last Thursday was perhaps the most interesting yet held by this branch of the society. A paper by J. A. Anglada on "Lubrication and Lubricating Systems" was followed by the reading of an article by J. C. Chase on "The Trend in Lubrication."

The discussion which these papers brought forth disclosed the fact that the terms splash, force feed and circulating, as applied to oiling systems, are somewhat confused. Splash was taken to mean the system whereby the bearings, cylinder walls, etc., are lubricated by the striking of the connecting-rod ends in oil reservoirs and thus throwing the oil onto the parts. Force-feed seemed to be generally accepted as that system in which the oil is fed to the bearings by force, while circulating was defined as the system whereby the oil is fed from a tank to the bearings by gravity, and thence forced back again into the tank.

It was stated that in the average case lubricating difficulty within the cylinder is due to insufficient piston clearance rather than to faulty oiling.

E. R. Hewitt, of the Hewitt Motor Company, was of the opinion that cylinder lubrication is as much a question of proper ring design as of the lubricant. It is best to have the ring joints staggard to make the oil leakage path as long and devious as possible, he said. Of the three lubricating systems outlined, he believes the splash system to be the best, since the fine particles of grit and metal which grind into the bearings are thrown out by centrifugal force by the splash arrangement, while with the force feed and circulating systems these particles are carried on with the lubricant and fed to the bearings again, thus cutting into them. The small particles are too minute to be filtered out.

ments upon the Parsons Non-Skid Company's patent covering such devices.

The case was not heard on its merits in the United States District Court except so far as it was necessary to go into the facts to cover the application for injunction. It was from the order of court granting the injunction, and not from the decision of the court on the whole case, that appeal was taken.

More Time for W. C. & P. Receiver

Application was made by Receiver Shepherd, in charge of the business of Wyckoff, Church & Partridge, Inc., for leave to continue the business for 30 days following the expiration of the 20 days already granted. An order to that effect was entered in the United States District Court. The preliminary report of the receiver will probably be filed at the expiration of the additional time granted.

It was announced by the company that work is progressing at the factory and that several trucks have been delivered within the past week. The reorganization plan is still in process of formulation and a strong effort to secure additional working capital is being made. The additional time granted the receiver to continue business is said to be for the main purpose of furthering the plans of reorganization rather than to realize upon the assets of the company through manufacturing.

Suit Over Windshield Designs

Suit has been filed on behalf of the Twentieth Century Motor Car and Supply Company against the Ideal Windshield Company for alleged infringement of patent number 1,011,892, which covers certain improvements in windshield construction. The case will be heard in the United States District Court. Appearance is due by the defendants company on May Pole day and time enough will probably elapse before the date of answer to carry the hearing over until fall.

S. A. E. to Have New Offices

New quarters will be occupied by the Society of Automobile Engineers about May 1, when the society will transfer its offices from their present location at Forty-first street and Broadway to the new United States Rubber Building, Broadway and Fifty-eighth street. The rooms to be occupied have a floor space of 1,500 square feet and will be divided into offices for the administration, members, stock, library and the headquarters for general manager Coker F. Clarkson.

The suite is located on the twelfth floor. The new building is twenty stories high and from the windows of the S. A. E. offices a delightful view of Central Park can be had. The building is centrally located as far as the automobile industry of the metropolis is concerned and is easily reached from any part of the city.

Members of the society who participated in the recent European visit have purchased by subscription a Waltham chronometer for presentation to Arthur Ludlow Clayden, a member of the Society resident in London, who first suggested the idea of an official visit to England, and who entertained the party while there.

INDIANAPOLIS, IND., March 29—The Indiana branch of the Society of Automobile Engineers had an open meeting on the subject of self-starters, in the rooms of the Hoosier Motor Club last night. Among the speakers were R. H. Combs, Prest-O-Lite Company, Indianapolis; J. F. Fitzgerald, Ignition Starter Company, Detroit; Albert Champion, Champion Ignition Company, Flint, Mich.; F. P. McDermott, Remy Electric Company, Anderson, and Lon R. Smith, Indianapolis representative, Eiseman Magneto Company.

Many Cases Go Over

April Rule Day Marked by Numerous Postponements—Ideal Company Sued for Windshield Infringement

Receiver for Wyckoff, Church & Partridge, Inc., Given Additional Time

APRIL rule day in the United States Courts failed to develop anything very startling in the way of legal procedure. The Dyer cases against Winton, Locomobile, Maxwell and Saurer went over until April 15, when answers are due. There is little likelihood of these cases reaching a hearing before the middle of next fall. The continuance and extension of time noted in the United States District Court was based upon a stipulation between the attorneys, William A. Redding for the defense and Dyer & Dyer for the complainant.

In the suit of Stromberg against the Flechter Carburetor Company, which is due for answer April 10, nothing is likely to develop until later in the month. The spark-plug case of A. R. Mosler & Company against the Auto Supply Company is on the calendar for April 8, but will go over until May by agreement. The suit of the Norma Company of America against J. S. Bretz Company is also scheduled for postponement.

Contest Board Revises Rules

NEW YORK, April 3—The Contest Board of the A. A. A. has completed its revision of the contest rules for the 1912 season governing all forms of contests such as road, speedway, mile and half-mile track races as well as all forms of reliability contests, hill-climbs, etc. In general the rules remain much as in 1911, but many important changes have been made. A few of these are as follows: In meets on mile and half-mile tracks it is now imperative to remove the top rail from the inner fence of the track and to establish a neutral zone on either side of the track from which spectators are barred. This zone is 40 feet wide at the end curves and 30 feet on the straightaways.

In all forms of contests the minimum weight clause has been eliminated so that in stripped stock chassis events the piston displacement classification remains as the only restriction.

In all forms of contests added powers are placed in the hands of the referee, who may now in addition to terminating a race before its scheduled finish, delay it at any time because of an impending disaster in conjunction with grand stands, etc. Also the flag code has been standardized.

The number of cars permitted to start in any track meet is limited to one for every 400 feet of linear track measurement.

Official announcement of the acceptance by William Schimpf of the chairmanship of the Contest Board of A. A. A. has been made, as heretofore outlined in THE AUTOMOBILE. The Contest Board includes the following: William Schimpf, chairman; H. W. Knights, Frank C. Webb, P. D. Folwell, Joseph H. Wood, Charles I. Ryan, David Beecroft, Frank M. Joyce, R. W. Carr, Ralph W. Smith, and P. J. Walker. The Advisory Committee includes: S. A. Miles, Jesse Froelich and H. A. Bonnell.

Fourteen Sweepstakes Entries

INDIANAPOLIS, IND., April 2—A White six-cylinder car has been entered in the big race to be held Memorial Day on the speedway, making the list of entries to date fourteen. The other entries are two Stutz cars, two Nationals, two Mercedes, two Case cars, one Fiat, one Lexington, one Cutting, one Simplex and one Knox.

Rehearing Granted in Patent Monopoly Case

United States Attorney-General Says Decision Affects Enforcement of Sherman Law—A Local Opinion

Busy Times at Cleveland—Car Famine Broken—Work Begun on the Omaha Car

WASHINGTON, D. C., April 1—Application for rehearing by a Supreme Court of the patent monopoly case was made today by the government, through Attorney-General Wickersham. The government asks leave to intervene, declaring the court's recent decision sustaining the right of patentees to restrict the use and price of accessories used with their products, thus creating a patent monopoly, is of gravest import to the people of the United States.

The Attorney-General says the decision affects enforcement of the Sherman anti-trust law. "The decision extends the power of patentees beyond the limits of the Constitution," declared Mr. Wickersham to the court. Margaret Henry, a party to the suit in the case recently decided, also asks a rehearing.

Frederick S. Duncan, member of the patent law firm of Duncan & Duncan, commenting upon the recent decision, said:

"The decision of the Supreme Court follows and reaffirms numerous decisions in the District court and Circuit Court of Appeals. It is not revolutionary, and in my opinion is an equitable holding:

"The rights affirmed to patentees are less, under this decision, than those allowed by statute, for under the patent law if an inventor wishes to do so he may put his patent in his pocket and deny its use to the public, absolutely.

"It is to the interest of the patentee to exact only reasonable requirements from licensees or users of his device. If he is unreasonable in his terms of license or use the public will soon become prejudiced. It is a fact that prior to the granting of the patent the public managed to get along without the device covered, and if the patentee makes its use too difficult; imposes onerous conditions, or assumes an attitude toward the public that is not in accord with justice, he will suffer through the conscious or unconscious boycott that will result.

"The inflexible law of supply and demand will take care of unjust monopolization of patent rights precisely as it always has in the past."

Work Is Begun on Omaha Car

OMAHA, NEB., April 1—Active work has been begun by the Omaha Motor Company, Omaha, Neb., on the new Omaha 30 automobile. At present, the work is being done at the Stroud Machine Factory which adjoins the site where the motor company will erect its plant. It is expected to have the first cars on the street about April 10. D. W. Henry has returned from the east where he made contracts for various parts and material. The company was organized recently with a capital stock of \$1,000,000.

Cleveland Factories Forced to Limit

CLEVELAND, O., April 1—There will be no startling changes in the 1913 products of the Cleveland factories over those of this year. It is almost certain that the older makers will continue their present lines with only minor refinements and a few alterations in body designs.

With perhaps one exception, all the factories are running to capacity. White cars are being turned out at the rate of twelve per day; Peerless is shipping six cars a day, which is the capacity of the plant; the output totaling about 1,200 for the year, while in the next 12 months it is expected to produce 1,500 cars. At the Peerless plant 2,000 people were employed all winter, and there are 2,500 on the pay-roll at present, it is said. The capacity of the Stearns plant is taxed to supply the demand from dealers and the same is true of the Winton factory. Among the electrics the same condition seems to prevail, Baker, Broc and Rauch & Lang plants carrying full load.

Latest in the motor industry in Cleveland is the new Goby Engine Company, making a non-poppet valve motor on the Goby patents. This firm is backed by the Perfection Spring Company and Christian Girl, manager of that company, is manager of the new firm.

The railroad car famine that is tying up shipments in Detroit is not felt here. This is explained by the fact that not only is this a larger shipping center and consequently in receipt of more cars, but the motor car industry is not so extensive and the demand for cars for this purpose is not so great.

Big Truck Combination Rumored

CHICAGO, March 29—Rumors reached Chicago today through the medium of the *Wall Street Journal* that a deal is pending whereby the Bethlehem Steel Company will absorb the Chicago Pneumatic Tool Company, which is identified with the motor industry through the manufacture of a commercial motor vehicle. It was said that if the deal went through the Bethlehem Steel Company would guarantee 5 per cent. dividends on the \$6,448,800 outstanding stock of the Chicago Pneumatic Tool Company. Inquiry at the local headquarters of the latter corporation today, however, brought out the positive denial of such a proposed deal.

Freight Car Famine Improved

DETROIT, MICH., March 31—The freight car famine which has been responsible for great inconvenience and delay in the shipment of completed cars during the past two months, has improved considerably with the warm weather. The railroads have been able to give more attention to the matter, now that their entire energies are not concerned with the moving of regular trains.

The factories in the west and north of Detroit are getting cars at their sidings more frequently. Those in the east part of the city, including the Chalmers, Hudson, Hupmobile and R-C-H, are still in bad shape for freight cars and have adopted the expedient of driving the cars across the city a distance of about 10 miles, to the yards which enter Detroit on the west. This enables them to save from 1 to 2 days in shipping time. At that, it has been a common thing for shipments of samples to branches to be sent forward in express cars at high rates.

The Abbott Motor Car Company is in a bad position to secure an early service over the Michigan Central. Its recent experiences with the traffic problem have roused the ire of Vice-President C. E. Bailey, who flatly states that, unless his company can get assurance of better treatment, it will surely take up seriously the question of finding another city less unfavorably situated.

Cadillac May Move to Toledo

TOLEDO, O., March 30—As the result of a meeting held Friday at Detroit between representatives of the Toledo Commerce Club and officials of the Cadillac Motor Car Company, it is probable that the main plant of the Cadillac concern, employing 5,600 men, having an annual pay-roll of \$4,368,000 and manufacturing 1,300 cars a year, will locate in this city. Officials of the Cadillac

and General Motors Companies will pay a visit to Toledo within a few days and look over the sites offered. The meeting took place at the factory offices of the Cadillac concern.

The most important reasons for determining a change of location are the poor transportation facilities and factory congestion which now prevails in Detroit. Nearly 300 cars standing outside the Cadillac factory now testify to the inadequacy of factory space. President Leland, of the Detroit concern, stated that wherever the factory is moved 100 acres of ground will be required. This inability of the railroads to cope with the situation was brought about by a government inspection which resulted in large quantities of equipment being condemned.

After the business session the Toledo party was entertained at luncheon by the officials of the Cadillac and General Motors Companies and in the afternoon was personally conducted through the plant by President Leland.

Details of Gramm-Overland Merger

LIMA, O., March 29—The recent deal by which virtual control of the Gramm Motor Truck Company passed to John N. Willys, owner of the Willys-Overland Automobile Company, was made by Mr. Willys purchasing a large block of Gramm common stock at par from A. L. White, W. T. Agerter, Ira Carnes and B. A. Gramm. It is intimated that the name of the concern will be changed to the Willys-Overland Truck Company to correspond to the name of the Toledo plant. Arthur L. White, now president of the Gramm company and W. T. Agerter, now its treasurer, will retire from these positions and devote their attention to the Lima Locomotive & Machine Works. B. A. Gramm, now vice-president and general manager, will continue in that capacity.

The capital stock of the Gramm Motor Truck Company is \$1,250,000, of which \$750,000 is common stock and \$500,000 preferred. The common stock controls the company. The preferred stock, or rather about \$450,000 of it, was recently underwritten by Geiger, Jones & Company, commercial bankers of Canton, Ohio. Nearly all of this has been placed.

Market Changes for the Week

The most active feature of the metal market this week was copper, which reached 16 cents per pound for electrolytic, which was the highest price recorded for the past 4 years. Indications are that with a rising demand the supply will be unable to keep pace, so that higher prices are an expectation. The lead market was steady, with no changes, while tin decreased slightly on Thursday, and rallied only temporarily on Monday, the net change of the week being negative. The tone of the rubber market was irregular, with a general downward trend, and a net decrease of 5 cents for fine up-river Para for the week.

Crude rubber declined 7 cents a pound from the high point in the New York market and at present stands at \$1.16 a pound for fine up-river. Sellers were shy after the news of the last auction sale in London had gained circulation. At the market level the demand is much larger than it was when higher figures obtained although most of the buying by consumers was in the coarser, heavier grades. The following table shows the daily change of the week being negative.

Material	Wed.	Thurs.	Fri.	Sat.	Mon.	Tues.	Week's Change
Copper, p. lb...	.15 1/2	.15%	.15 1/2	.15 1/2	.15 1/2	.15	9/10 + 1/2
Lead, p. lb...	4.30	4.30	4.30	4.30	4.30	4.30	...
Rubber, p. lb. up-river Para...	1.21	1.21 1/2	1.20 1/2	1.18	1.15	1.16	—.5
Tin, p. lb...	.43%	.43	.43	.43	.43 1/2	.43	—.5

Glide Makers Increase Capital

PEORIA, ILL., March 30—Papers were filed with the county recorder this morning showing that the capital stock of the New Bartholomew company at Peoria Heights, where the Glide car is made, has been increased from \$200,000 to \$350,000. A meeting of the stockholders was held at the office of the plant on March 16, at which time the increase was voted.

Makers File Protest Against a Tariff Cut

Say High-Priced Cars Would Suffer Most, as Labor Item Forms Larger Percentage of Total Cost

Details of Gramm Sale to Overland—July 1 Set for Henderson-Cole Change

PROPOSED reductions of the tariff of 45 per cent. on completed automobiles, as advocated by the Underwood Tariff bill, now pending before Congress, have drawn a forceful protest from the automobile industry which has been voiced in a brief submitted to the Finance Committee of the United States Senate by a committee of automobile manufacturers.

In the brief the contention is made that a reduction of the present duties by 5 per cent. would make it necessary to reduce wages an average of 8 per cent., in order to preserve the existing parity now enjoyed in the markets of the world. It is shown that the item of labor on certain high-grade cars is \$1,322, while in cars of very moderate price the labor item runs as low as \$90 where production is on a large scale.

According to the argument, the high-priced cars would suffer more in proportion as the item of labor represented a larger percentage of the total cost.

The brief was submitted by Charles Clifton, W. C. Leland and Henry B. Joy, and the companies represented were the Pierce-Arrow, Locomobile, Peerless, Packard, Cadillac, Premier, United States Motor Company, Nordyke & Marmon, Pope, Hudson, Metzger, Waverley and Overland.

Henderson-Cole Change Due July 1

INDIANAPOLIS, IND., March 29—Charles P. Henderson, president and general manager of the Henderson Motor Sales Company, general sales agents for the Cole Motor Car Company of this city, becomes general sales manager for the Cole Motor Car Company, July 1, and the entire manufacturing and selling end of the Cole Motor Car Company will be conducted under that firm's name with J. J. Cole continuing as president. The present efficient organization of the Henderson Motor Sales Company joins the Cole.

Under the new regime the sales department will retain its present downtown headquarters which were erected especially for accommodation of sales and advertising. Homer McKee will have the direction of all the Cole advertising and publicity.

R. P. Henderson, who has been vice-president of the selling organization, will soon announce a medium-priced car which will be called the Henderson.

Fisher Out of Fisher-Gibson Firm

INDIANAPOLIS, IND., April 1—Probably the most important change that has taken place among local motor car dealers in many years, is announced in the withdrawal of Carl G. Fisher from the Fisher-Gibson Company. Mr. Fisher in the future will devote his entire attention to the Prest-O-Lite Company and the Indianapolis Motor Speedway, being president of both.

The Fisher-Gibson Company passes into the control of Cecil E. Gibson, who has been treasurer and general manager of the company for the last 18 months; David Sommers and David May, of Cincinnati, and A. Waldheim, of St. Louis.

The Fisher-Gibson Company is the distributor in this territory for the Overland, Stearns, Alco, Stutz, Stoddard-Dayton, Empire and Flanders electric.

Jersey Sees the Light

Stickel Reciprocity Measure Passed and Receives Governor Wilson's O. K. Despite Opposition to the End.

Slight Increase in Registration Fees is Looked Upon With Equanimity by Automobilists

TRENTON, N. J., April 2—Governor Woodrow Wilson signed the Stickel bill, providing for automobile reciprocity this afternoon after a largely attended meeting at which both sides were represented. The opposition to the bill was not effective as far as arguments went. Its advocates touched upon the power of attorney clause which was eliminated; the disadvantages of increased automobile traffic; prospective increase in road taxes and general hostility toward the automobile.

The defenders of the bill had much the better of the argument, showing that the power of attorney was ineffective; that the increased automobile traffic would be a big benefit; that taxes for road improvement would benefit the whole state and that the automobile has come to stay and must be reckoned with as a factor in civilization.

Governor Wilson called attention to the fact that there was at present on foot a movement for a system of state roads that would remove a large part of the burden of state road taxes from the country districts and recommended that the rural organizations devote attention to it instead of opposing the automobile law.

The Stickel bill went through the upper house with just the right number of votes to pass it. The Senate tacked on an amendment raising the rates for registration 50 per cent. and sent the bill back to the Assembly for concurrence. The lower house promptly acceded to the amendment.

It is estimated that the added revenues to the state resulting from the raise in rates will amount to about \$200,000 a year.

Feature of the New Law

The tenor of the Stickel bill is distinctly reciprocal. The measure is in ten sections, the gist of which is as follows: Registration is required except where special regulation is made to cover non-residents. All registrations expire with the end of the calendar year, but 31 days' grace are granted.

The rating of horsepower shall be made according to the A. S. A. E. formula.

Three classes are provided, namely: Cars of 10 horsepower or less, for which the fee is \$4.50; cars of from 11 to 29 horsepower, for which the fee is \$7.50 and cars over 30 horsepower, \$15. In addition, automobile commercial trucks weighing unloaded over 4,000 pounds, shall pay a fee of \$10 more than their horsepower rating. Provision for half the above rates of fees is made where registration takes place after September 1 in any year.

Authority is given to the Commissioner of Motor Vehicles to refuse to register a car that does not comply with the requirements of the law or which may seem unsuitable for use on the roads, in his opinion.

Sale of a car nullifies the license but if application is made by the purchaser with payment of \$1 as a transfer fee, the commissioner may validate it.

Any car owned by a non-resident which is lawfully registered in his home state in compliance with the law covering the operation of motor vehicles and duly displaying its registration numbers, may be driven in New Jersey for 15 days in each calendar year, divided any way to suit the wishes of the owner, without registration, fee or charge of any kind, provided that

the state in which the car is registered grants equal privileges to the owners of cars registered in New Jersey. In case a smaller privilege is allowed to New Jersey residents in a certain state, the limits established by the laws of that state shall govern its own citizens while in New Jersey.

The same provisions are made for registration of chauffeurs. They need no registration in New Jersey if the law of their home state does not require non-resident chauffeurs to be registered.

All told it is about the broadest and most sensible and most creditable automobile law in the United States. It takes rank with the Connecticut statute and equals Vermont's in its liberality.

Last year there were registered, as New Jersey-owned automobiles, the large number of 25,049 cars. Non-residents paid yearly fees and registered 13,352. In addition there were 12,072 8-day touring licenses issued. Under the old law, there were two classes of chauffeurs and in the first class there were 23,850 licenses issued. In the second class there were 18,501.

The motor vehicle department remitted \$391,377 to the state treasury as the result of its work during the year ending December 1, 1911.

Effect Should Be Stimulating

Last year the state spent a trifle less than \$2,000,000 for road maintenance and its share for financing of new construction amounted to about \$300,000. This was approximately one-third of the total amount used for that purpose.

The effect of the new law will be marvelously stimulating to the state, unless experience is wholly at fault. It is estimated that the letting down of bars raised against New Jersey will result in increasing the sales of automobiles in New Jersey fully 25 per cent. a year.

On the other hand, the fact that New Jersey has opened her doors, means that the 76,000 New England cars, the host of New York cars, Pennsylvania's thousands and those of Maryland and Delaware are welcome to spend 15 days in New Jersey. The total is close to 200,000 and it is not unreasonable to suppose that fully half will take advantage of the invitation. The number of visiting cars will probably reach 110,000, according to estimates made by the automobile forces of the state.

It has been discovered that the average tour is 3 days and a small fraction, and that the cars carry an average of 3 1-2 visitors during that period. If the proportion is carried out, New Jersey will enjoy a measure of prosperity. Long experience shows that an allowance of \$5 a day for each person is a fair average for expense on tour. This would mean \$17.50 a day or \$52.50 for each visiting car. At 110,000 cars a year, this means a gross expenditure of \$5,775,000.

If 25 per cent. of that amount its profit to the New Jersey business men, it means that \$1,443,750 will find its way into their bank accounts. The profit on the tourists would almost pay for the road maintenance, thus raising the burden of taxation from the shoulders of the citizens in a measurable degree. The business men pay the taxes anyway and if their profits are increased through the operation of law, it means that their load will be lighter to bear.

It is not unlikely that the total additional profit of New Jersey resulting from the new automobile bill will reach \$2,500,000 a year and in the course of a few years may run up to \$5,000,000.

Preparing for Jersey Travel

WILMINGTON, DEL., April 1—New Jersey having modified its automobile regulations, Delawareans are making preparations for motoring to Atlantic City and other seashore resorts in larger numbers this year than ever before, and in order to enable them to do so without the necessity for going to Philadelphia, the New Jersey & Wilmington Ferry Company is now arranging to improve the landing facilities at Penn's Grove, N. J.

Bay Staters Up in Arms

Legislature Proposes to Increase Automobile License Fees to Aid in Building as Well as Maintaining Roads

New York Aldermen Abolish the Muffler Cut-Out Gist of New Mississippi Law

BOSTON, MASS., April 1—The biggest fight that Bay State automobilists ever had on their hands is now about to begin as a result of the action of the committee on roads and bridges of the Massachusetts legislature last week, when it made two decisions which in effect mean that the owners of motor cars not only may have to pay for road maintenance but road construction as well. The first report given out was that no legislation was necessary upon the application of the Highway Commission for an additional appropriation to continue the work of building state highways. The commission reported that its annual appropriation for constructing roads ends with this year, and so additional money was needed for building. It asked for \$5,000,000 to cover a period of five years beginning with 1913, to be spent at the rate of \$1,000,000 a year. The last five years the appropriation was \$500,000 a year.

Following that announcement came the report that the committee had decided to report a bill for an increase in the fees of motor cars so that, with the exception of the very small cars, there would be a raise all along the line. This was all the more surprising when Col. W. D. Sohier, of the highway commission, at the hearings stated that the present fees were large enough to pay for road maintenance. However, under the proposed new scale it would net the state perhaps \$750,000 a year, and it is believed that out of that sum enough money may be had for continuing the construction work as well as the maintenance. Here is the way the proposed scale works out:

Horsepower	Present fee	H.P. increase	Proposed new fees
5 to 19	\$5	30 cents per H. P.	\$4.80
19 to 29	\$10	40 cents	\$11.60
29 to 39	\$15	50 cents	\$19.50
39 to 49	\$20	75 cents	\$36.75
50 and over	\$25	\$1	\$50.00

Bill May Prove a Boomerang

So, according to these proposed rates, there is an increase from 10 to 100 per cent. Under the present fee the State got nearly \$500,000 from the motorists last year and the agitation for an increase seemed inexplicable. Members of the Legislature are beginning to find out that there is a boomerang to the bill and that the members of this committee may be made goats of, and they want to clear their skirts of the charge of being unfair to the wage-earners that has been held up to them. However, no matter what happens if an increase is passed, the motorists will take it through to the United States supreme court to test its constitutionality.

What surprises some of those who have followed motor legislation for years is the fact that Governor Foss allowed himself to be practically hoodwinked in the matter, for that is what it really means, as the real power in favor of increased fees has been the highway commission under its present régime. But now the blame may be thrown upon the governor, as he recommended the increase after Mayor Fitzgerald of Boston and Colonel Sohier talked with him. What the motorists intend to do is to enlist all the wage-earners in the fight and bring out the fact that it is a direct slap at an industry that has brought wealth to the State and provided employment to thousands. Mayor Fitzgerald's advocacy of it will cost him some votes later, for it is believed that he has the gubernatorial bee in his bonnet. The motorists intend to see to it that members of the

legislature will be put on record so that next fall any who live in motor districts and wish to go back will have a fight on their hands.

It is understood that the committee also has in mind a project to put the fees for commercial cars on the same basis as pleasure vehicles as a result of the Highway Commission's activity. In view of the fact that many of these vehicles never go outside of cities, where the streets are paved with cobblestones, the injustice of this is apparent. In fact, the industry seems to be the target for radical legislation this year more than ever.

The Massachusetts State A. A. has taken up the fight, and at a meeting of the board of directors Saturday President L. R. Speare was directed to send out a letter to the officers of all the clubs to notify their members of the proposed increase and to line them up against it.

Aldermen Rule Against Cut-Out

The New York City Board of Aldermen on Tuesday last unanimously adopted the muffler cut-out ordinance introduced by Alderman John H. Boschen, which was drafted by the technical committee of the Touring Club of America, of which Joseph Tracy is chairman. The ordinance now goes to Mayor Gaynor, who must approve it within 10 days. It becomes operative in 90 days after his approval and will prohibit the use of the muffler cut-out on motor vehicles operated upon the city streets.

This ordinance, which has long been advocated by the Touring Club of America, will be used as a model for adoption in other municipalities throughout the country. The ordinance as adopted by the Board of Aldermen is as follows:

Section 1. Every motor vehicle propelled by an internal combustion engine, when such vehicle is on any street, road, avenue, alley, park, parkway or public place within the city limits shall, when such engine is running, be equipped with a muffler or silencer, through which all of the exhaust gases from the engine will escape into the atmosphere.

Section 2. It shall be unlawful for the operator or driver of any motor vehicle to use any cut-out, fitting or other apparatus, or a device which will allow the exhaust gases to escape into the atmosphere without passing through a suitable muffler or silencer as described in Section 1.

Section 3. Any person violating the provision of this ordinance may upon the conviction thereof by any City Magistrate be fined a sum not exceeding \$10, and in default of payment of such fine, may be committed to prison by such City Magistrate until the same be paid, but such imprisonment shall not exceed ten days.

Section 4. This ordinance shall take effect ninety days after its approval by the Mayor.

Gist of Mississippi's New Law

JACKSON, MISS., March 29—The new automobile law of Mississippi provides for registration of all motor vehicles with four wheels and establishes a fine of \$100 or less for failure to register. The cars are divided into four classes based upon maximum horsepower. The first class includes automobiles of 25 horsepower or less, fee \$5; second class, between 25 and 40 horsepower, \$15; third 40 to 50 horsepower, \$20; and fourth, over 50 horsepower, \$25.

Non-resident owners who have complied with the laws of their home states are privileged to free entry into Mississippi for 30 days.

The bill was passed in March and was signed by Governor Earl Brewer on March 16. It will be effective June 1.

Freak Laws Temporarily Buried

ALBANY, N. Y., March 29—With the morgue loaded with defunct and semi-defunct bills, representing the greatest aggregation of freak legislation ever presented in any one session, the New York Legislature has adjourned without doing any serious damage. Throughout the session it was apparent that the members with conservative ideas were in the majority and despite the flood of fearful and wonderful bills introduced, few got as far as a vote.

The tire-dating bill, freak lighting measures and similar legislation have been laid upon the shelf for a time at least.

Milwaukee Offers to Stage Big Races

Wants Vanderbilt and Grand Prix—Is Prepared to Raise Necessary Funds and to Patrol Course

New Orleans Offers Additional Prizes for Big Tour—Disbrow's New Record

MILOUKEE, WIS., March 31—Formal application for the right and sanction to run off America's greatest motor classics, the races for the Vanderbilt and the Grand Prix, at Milwaukee next fall has been filed with the various organizations associated with and related to the conduct of the contests by the Milwaukee Automobile Dealers' Association.

It is the greatest and most monumental undertaking that Milwaukee has ever attempted and the Milwaukee Automobile Club, Merchants' & Manufacturers' Association, Citizens' Business League, Greater Milwaukee Association, Chamber of Commerce, City Club and others have been joined together in one grand effort to make it a success.

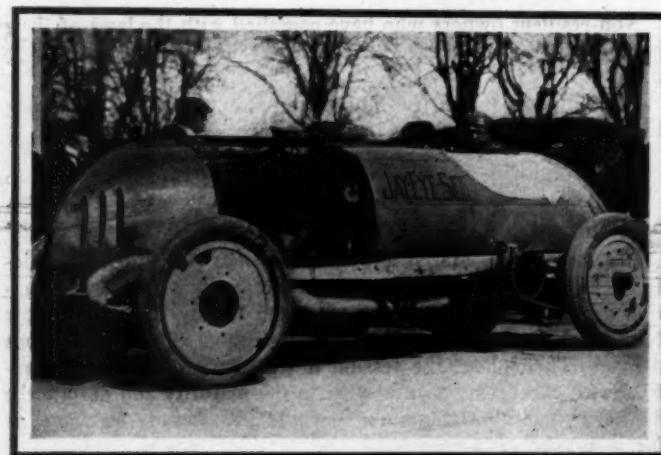
The Chicago Motor Club has adopted resolutions offering Milwaukee every iota of support and co-operation it can command. Middle Western motoring circles are aroused as never before.

The Milwaukee Hotel Keepers' Association has been among the first to get to work on problems relating to the conduct of the races and has given assurance that the city's hotels can take care of a crowd 25 per cent. greater than Savannah or any other city, barring only New York and Chicago.

The choice of race courses, which was a wide one from the very start, has narrowed down to two splendid stretches in the town of Greenfield, Milwaukee county, only a few miles from the center of the city. The M. A. D. A. is now dealing only with the one township, Greenfield, and announces that the authorities have assured it the most cordial support. No obstacles are in the way for the actual running of the contests.

The two courses are but 1 1-2 miles apart. The now preferred course lies almost entirely within the township, there being only a 1-2 or less running along a township line. The other course has two legs running along town lines and is less preferable because of its shape.

The Janesville-Beloit course is diamond-shaped, the opposite legs in each instance being parallel. This shape gives but four



Disbrow's Jay-Eye-See, which broke world's dirt-track record

curves, none being less than 90 degrees. It will be necessary to change but one curve, the lower corner, which can be rebuilt without the slightest obstacle. The entire turn is an orchard, the owner of which has given permission to cut through it to make a curve of 750 to 900 feet. The course measures 10.7 miles on unofficial meter reading.

Course No. 2, a mile east of the preferred course, is triangular in shape, the hypotenuse thereof being slightly tortuous and the base and side being practically a straight line, as they run along township lines. This course measures approximately 12.2 miles. It has five or six culverts crossing small creeks. Course No. 1 has but two culverts.

The Madison division of the Chicago & Northwestern railroad runs along the north end of both courses. The southwestern division of the interurban lines of the Milwaukee Electric Railway & Light Company runs along the entire west side of the preferred course, the north end of which bounds on the city limits of West Allis for the distance of about 1-2 mile.

The contour of both courses is slightly rolling, with no hills but several long inclines which will need but little grading. The existing road is well drained, although by no means in good condition. It will cost from \$7,500 to \$12,000 to rebuild the roads in each course, no matter which is selected.

In regard to speed, it is the opinion that nothing like the average at Savannah could be attained here, although this is merely a matter of how much can be done to rebuild the road.

Added Trophies for A. A. A. Tour

NEW ORLEANS, April 1—New Orleanians are showing their appreciation of having been awarded the A. A. A. Reliability tour by offering additional trophies. Seven cups have been offered and a number of others will be tendered at a later date. These cups have been turned over to the committee of the Louisiana Motor League so that they may specify under what conditions they may be won.

Frank M. Joyce, who represents the tour, states that he has no advices as to the point which will be selected for the start but there is a rumor that Indianapolis has been tentatively chosen.

Arrangements for the entertainment of the tourists already are taking form. A liner will be chartered especially for those of the party who will visit Panama. All of the cars will be left here, as no attempt will be made to carry out the suggestion that the party motor across the isthmus.

Disbrow's Dirt Track Mile Record

SAN DIEGO, CAL., April 1—Louis Disbrow, driving the 290-horsepower racing car Jay-Eye-See, broke the world's record for 1 mile on a circular dirt track here yesterday. The former mark of 48.62 seconds was brought down to 38.62 seconds, a reduction of 10 seconds. Disbrow's time averaged 93.26 miles an hour, one lap being negotiated at the rate of 108 miles an hour.

The car is the reconstructed Fiat which Strang drove to records 2 years ago at Atlanta, Ga.

Disbrow also set a new mark for 12 miles, covering that distance in 11 minutes and 17 seconds.

Oldfield's Term Is Shortened

Barney Oldfield and Ben Kerscher, who have been under the official ban of the American Automobile Association since the fall of 1910, have had their disqualification commuted and both will be eligible after April 30. This will give Oldfield an opportunity to compete in the Indianapolis 500-mile race on Decoration Day. This action of the Contest Board relieves Oldfield and Kerscher of 60 days' suspension.

Bill Pickens still has 5 years to serve, being declared eligible after July 1, 1917.

Varnish: Its Relation to Body Finish

The Best Is Never Too Good—Substantial Body of Varnish Absolutely Essential to Long Life of Surface, Especially Upon Paneled Sides of Commercials

AS the beautifier, protector and preserver of the surface, varnish is at once and for all time the most important factor connected with the finish applied to the automobile. Other things having to do with the painting and finishing may pass away, but varnish goes on forever.

Without a strong and substantial structure of varnish protecting and making brilliant the colors wrought beneath it, the cleaning and renewing and washing of the surface would avail little, and instead of a surface renewing and retaining its original luster and wealth of color we should have a striking imitation of a truck farmer's cart.

Recognizing, therefore, the indispensable part which varnish plays in the automobile industry, and in the appearance of the car while in service, it is a matter of the first moment to both the car painter and to the car owner that the varnish applied to the car should be of prime quality—even of superior quality.

It may not be essential that the exact composition of the varnish should be known, nor how it is brewed and boiled and drawn into tanks, there to remain until the cobwebs of age have collected, but it is in the highest degree worth while to know the working, and drying and wearing properties of the varnish and to be able to pass expert judgment upon its appearance when applied to the car surface.

To the consumer it does not matter materially whether the varnish is made up of a soya bean oil, china wood oil, linseed oil, fish oil, and gum, or some other combination of ingredients so long as it works and dries right, looks every inch the royal garment it really is and wears like a bolt of homespun.

Next to knowing how to use varnish is knowing how to buy it. Buy the best, having in mind actual requirements regardless of the price. Varnish is a precious commodity and there is no advantage to be gained by taking chances on an inferior brand. Buy of the reliable manufacturer.

Varnish enters into the painting and finishing of the car over the color. To be more exact, it is first used to make up the varnish color, the process of which is like this: First thin the color with turpentine, and then to 1-4 pound of color add 2 pounds of rubbing varnish, stirring the mixture intimately. In fact, the best way to mix the color and the varnish is to pour the diluted color and the varnish into a varnish can and then shake vigorously until all the separate ingredients become one.

Always Apply Varnish Freely

Never use oil in connection with a color that is to be used for making varnish color. In all cases let the varnish largely predominate. Flow the varnish color freely over the surface and let it stand in a warm apartment until it dries thoroughly. Rub lightly with a thin perforated felt pad, moistened and dipped in pumice-stone flour, knocking the gloss down uniformly over all the surface. Wash up clean, and, if necessary to develop a deeper intensity of color, apply a second coat of this varnish color, rubbing it, in due time, in the same manner as advised for the first coat.

Again wash up, and then to a pint of clear rubbing varnish add, say, 1-2 ounce of the color to neutralize the discolored effect of the varnish. Give this coat plenty of time to dry and then rub with water and pumice-stone flour. Avoid rubbing

across the ends of the panels, and keep well off the edge of moldings, corners, etc. Clean up and do all lining and ornamental work.

Next apply a coat of clean rubbing varnish, flowing on a full, heavy application. After 3 or 4 days rub this coat down with water and pumice-stone flour, using for the work a 1-2-inch perforated felt pad. For the moldings, carved work and any parts having sharp edges use in place of the felt pad a piece of heavy broadcloth. The soft goods will form up better to such parts of the surface and will not cut through the sharp edges so quickly.

Work to get a smooth, uniform surface with the same depth of varnish protecting all the parts. By this means the varnish is equipped, so far as the painter is able to equip it; to wear alike throughout all parts of the surface.

Two Varnish Coats Should Suffice

It is of the utmost importance, moreover, that as much of the body of varnish as possible be left upon the surface. Invariably the ultimate results will show that, other things being equal, the varnish carrying the largest percentage of its original depth and body will wear the longest and give the color coats a more efficient protection.

After surfacing in proper manner the first coat of clear rubbing varnish, and washing it very clean, proceed to apply a second coat of the clear rubbing varnish, using, as in the first instance, a plentiful flow.

If brush marks and all the other disfiguring things which mar the surface upon the slightest provocation are avoided, and the varnish comes forth with scarce a blemish, it will hardly need more than a mere dulling down with the water and pumice-stone flour, used as above described. For all ordinary good work these two coats of varnish color, and the two coats of clear rubbing varnish, should suffice, but in the event of having extraordinarily large surfaces, such, for example, as are found upon some of the paneled-top delivery wagons operating about the larger cities, another coat or two of rubbing varnish will be necessary.

Within the last year or two the car owner has had reason to justify himself in the belief, long entertained by the painter as an actual fact of experience, that a big and substantial body of varnish is absolutely essential to the long life and abundant usefulness which it is expected to serve. Especially is this robust body of varnish to be desired upon the commercial car.

All advertising or ornamental work, in gold leaf or color effect, applied to the car is expensive and is maintained only through the protection given it by the varnish, which protection is alone to be had through the strength and power of the varnish. The painter and the car owner may well unite in an effort to promote the usefulness and prolong the life of this main motor car necessity.

So-CALLED "LOCK WASHERS" which are made of steel and so constructed that when properly fastened they prevent nuts from backing off bolts, and which have no name uniformly and generally recognized in trade, are dutiable as "washers" under paragraph 162, tariff act of 1909, rather than as manufactures of metal under paragraph 199 of said act.

The How and Why of Electrical Devices Familiar to Automobilists

By JOSEPH B. BAKER

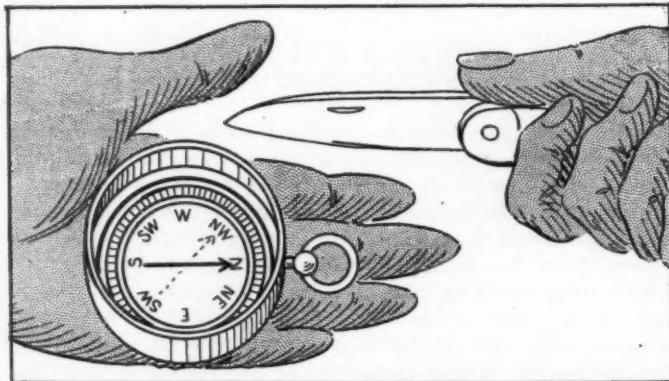


Fig. 1—A steel or iron knife causes deflection of the magnetic needle when approaching it and entering the magnetic field

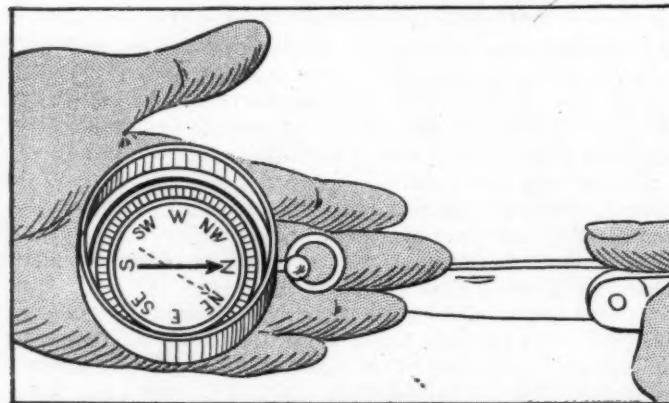


Fig. 2—The magnetic field extends in all directions, as the knife deflects a needle, though separated therefrom by the hand

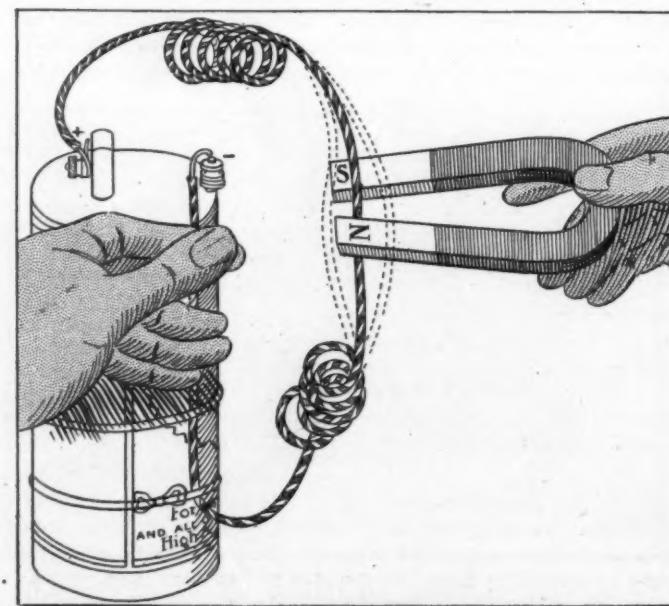


Fig. 3—The magnetic field surrounding an electric wire which is free to move is shifted by interference with the field of a magnet

Explaining the Relations of Magnetism and Electricity in Experiment and Practice

Part I.

HOW do voltmeters and ammeters work? When they are connected up, what makes the pointer of the voltmeter move from the zero mark on the scale and come to rest at the figure, indicating the voltage of the lighting battery or ignition circuit, and the pointer of the ammeter indicate the amperage flowing in the circuit?

The how and why of these instruments is simple enough when the subject is looked at in the right way; it is only necessary to examine a few basic facts about electricity which may be made clear. These facts once grasped, the mere external appearance of mystery and complexity will no longer be there to trouble or baffle the inquirer, and in examining any new instrument he will readily be able to understand its working, knowing the fundamental principle.

Fig. 1 is an ordinary pocket compass. Hold it in the hand, and wait for its needle to get through dancing back and forth and come to rest in its north and south position. Now take a piece of iron—a pocketknife, a steel key, anything—and approach it very cautiously toward the compass. Watching the needle sharply, we can see that it is moved to one side, or deflected, as the bit of steel approaches nearer and nearer. Take away the pocketknife and bring it up from the other side of the compass, or bring it up to the latter from underneath the hand, Fig. 2: from whatever direction it approaches the needle that little pivot-supported magnet is deflected as soon as the bit of steel comes near enough. The nearer the steel comes, the more the needle is affected, just as though the latter was surrounded by a region, or field, of force—magnetic force.

Filings Show Lines of Force

Take away the compass and lay on the table a horseshoe steel magnet, the ordinary magnet, Fig. 7, that boys have. Take the armature or keeper off the poles of the magnet, and lay over the magnet a piece of paper and sprinkle evenly over the paper a small quantity—perhaps a thimbleful—of fine iron filings. The filings should be uniformly fine, and they should be dry and free from admixture of dirt or foreign matter. As the filings, sprinkled gently from a height of 6 or 8 inches above the paper, reach the surface of the paper they arrange themselves into regular curved lines, as shown in Fig. 7, very thick and almost straight just over the magnet's poles, and radiating out from the poles in sweeping curves. In and near the interpolar space thick lines of filings run in short, compact curves from one pole to the other, while a little farther away from the poles the curves are of larger radius and fainter, and still farther away the curves start out in a long sweep and go off into space to a vanishing point. The general arrangement confirms the conclusion from the preceding experiment: the space around the magnet is a field of magnetic force made up, as it were, of lines of force running from the N pole to the S pole; and if we now bring up the little compass and lay it anywhere on the sheet of

paper bearing its picture in iron filings we see that the compass needle takes up a position parallel to the line of filings on which it may happen to have been placed.

So much for magnetism in its relation to iron and steel. We will now show that a magnetic field is also produced by the electric current. Place on the table an ordinary cell of dry battery, and connect its binding posts by a foot or two of copper wire. We have taken away the horseshoe magnet, but the compass is lying on the table. Pick up the dry cell and bring it up toward the compass so that the copper wire, through which a current is now flowing, is presented to the needle as indicated in Fig. 4. When we try to hold the length of wire carrying the current near the needle and parallel to it we find that the needle is deflected, just as it was when we brought up the steel pocket-knife toward the needle. If we bring the wire up from any direction, for example, underneath the compass, as in Fig. 5, the needle is deflected, and deflection is stronger when the wire—that is, the flowing current of electricity—is brought closer up. Evidently there is a reaction or kind of "action at a distance" between the little magnet and the current—a reaction which shows in the movement of the magnet because that is so light and so delicately supported.

Reaction of Magnetic Fields

This reaction is between the magnetic field surrounding the compass needle and a magnetic field surrounding the current of electricity, as we may readily show. We had left the wire disconnected from one binding post of the dry cell, so as not to run the cell down unnecessarily. Take a fairly stiff card of pasteboard, and thread the wire through a small hole punched in the center of the card, and then reconnect the end of the wire with its binding post, Fig. 9. Now, holding the card horizontally, sprinkle a pinch of iron filings on the card at the point where the wire goes through, noting that the filings as they strike the card arrange themselves in closed curves concentric with the wire, as shown in the sketch. Just as in Fig. 7 the lines of filings were thickest near the poles of the horseshoe magnet, so in Fig. 9 the lines of filings are thickest near the wire; and the behavior of the filings proves in the present experiment, just as it did in the former one, that there is a field of magnetic force. And now we can understand that it is the reaction between the field surrounding the little compass needle and the similar field surrounding the wire carrying a current that produced the movement of

the needle when the wire was brought near the needle. That the reaction, or mutually acting force, can cause the wire carrying the current to move if the wire instead of the magnetic needle is delicately supported, we can readily show—simply by repeating the experiment with a flexible wire to carry the current and a heavy magnet instead of the light compass-needle magnet. Turn on the incandescent lamp of a droplight burning on direct current—lowering the droplight to a point near the table and removing its shade. Cautiously move the horseshoe magnet toward the white-hot, loop-shaped filament of the lamp, Fig. 8. When we have brought the magnet fairly near the lamp we note that the lamp filament, which is a delicate carbon wire carrying a current, is turned and twisted to one side, within its vacuum bulb, and indeed if we are not careful we may force the filament up

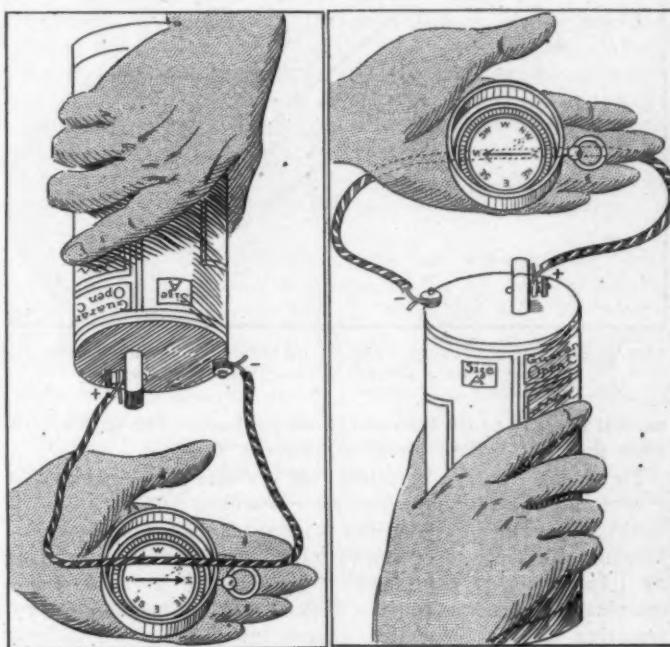


Fig. 4—An electric current deflects the magnetic needle like steel

Fig. 5—The electric wire, like the knife, acts right through the hand

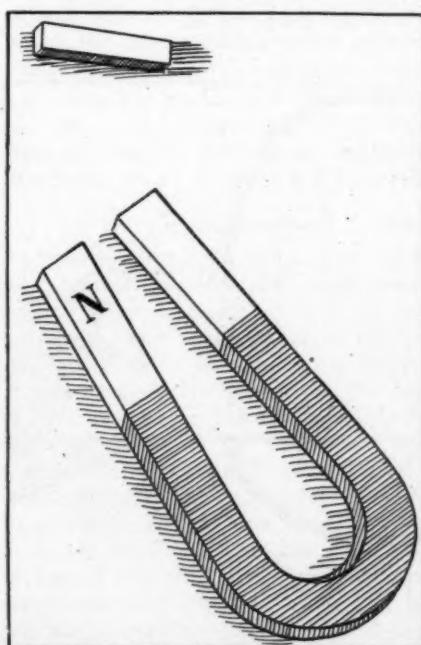


Fig. 6—A horseshoe magnet and armature, presenting a very handy instrument. Horseshoe and armature are of steel

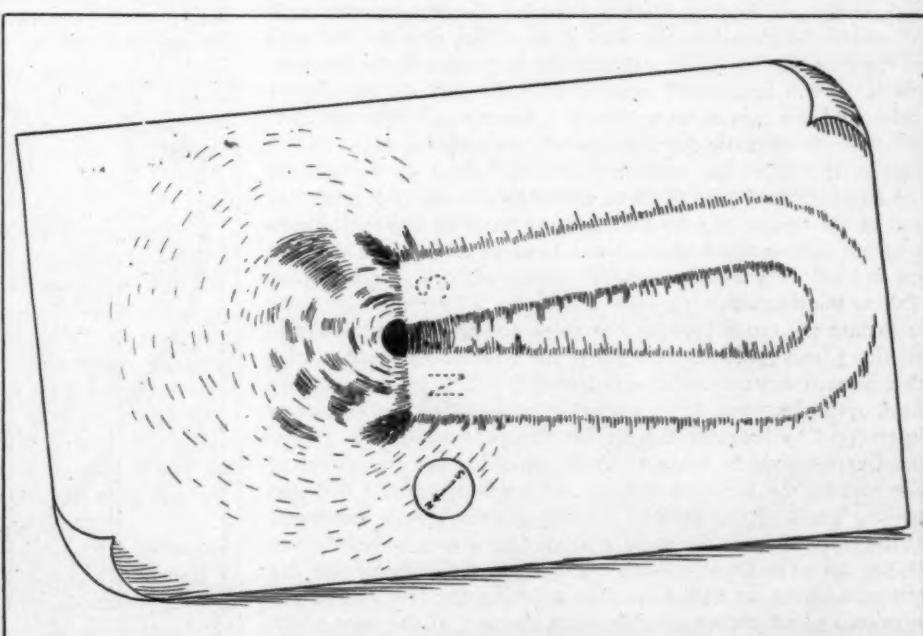


Fig. 7—Iron filings strewn on a paper laid on the horseshoe magnet arrange themselves according to the magnetic lines of forces, as is shown by a compass placed in the magnetic field

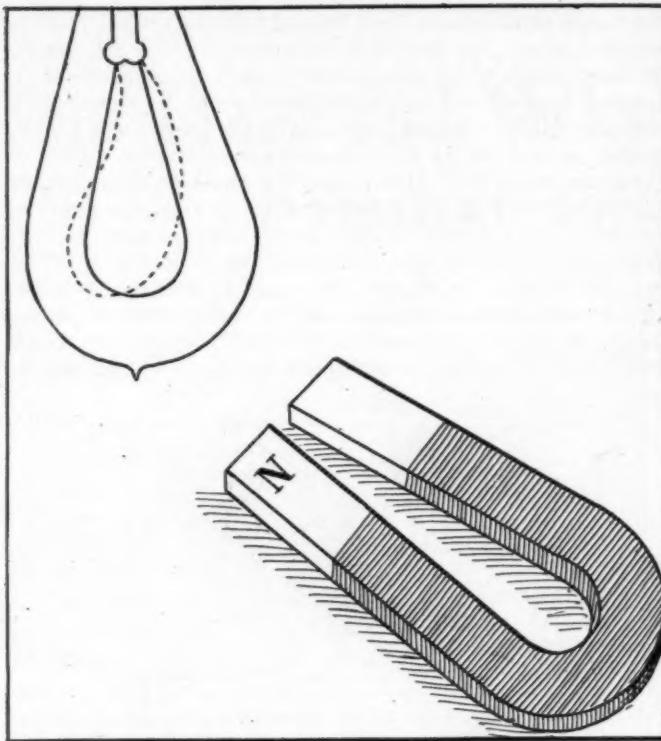


Fig. 8—A magnet brought near an incandescent lamp deflects the filament while a current passes through the same

against the wall of the bulb and break the lamp. The dotted lines show the position into which the filament is forced.

To summarize: We have seen that a magnetic field surrounds a wire carrying a current, just as a magnetic field surrounds a steel magnet, and that these two fields react each upon the other, causing a force and therefore a tendency toward a relative movement between wire and magnet. We can now go further and examine the direction and the amount of this mutual force by repeating the last-mentioned experiment under more definite conditions.

Horseshoe Magnet Deflects Wire

Connect the piece of wire into the binding posts of the dry cell again, and approach the horseshoe magnet to the length of wire so as to inclose the wire at any point between the poles of the magnet, Fig. 3. If a strong current is flowing in the wire, the latter will be moved a little at the point between the magnet poles, and this movement will be in a direction at right angles to the lines of magnetic force which are supposed to pass from N pole to S pole of the magnet. This movement of the wire by the magnet's field may be more strikingly shown by leaving one end of the length of wire disconnected from its dry-cell binding post but held in the fingers of one hand so as to touch this end on and off to make intermittent contact with the binding post. Taking the magnet in the other hand, pass it over the wire so as to inclose the latter between the poles of the magnet, as shown in Fig. 3, and touch on and off at the free binding post, noting that at each contact the wire is twitched a little in the magnet's field, springing back to its normal position when the current is interrupted by breaking the contact. In performing this experiment care should be taken to avoid mistaking any movement of the wire by the hand, in making and breaking contact with the binding posts of the battery, for the electromagnetic movement at the point between the magnet poles; and it may be best before trying the experiment to lash the wire to the body of the dry cell with string, as shown, so that touching the free end of the wire on and off cannot possibly move the part of the wire which stands between the magnet poles.

In Fig. 3 the wire is urged toward the right, the flow of the current being in the direction shown, that is, downward in the

wire, and the N pole of the magnet being in the foreground. If the current in the wire is reversed, so as to flow upward between the magnet poles as arranged, the movement of the wire will be toward the left. The rule for the direction of the force exerted by another magnetic field upon a wire carrying a current is graphically expressed as follows: Imagine a tiny swimmer swimming in the current and with the current and always facing toward the N pole of the steel magnet, or, in other words, against the direction of the lines of force of the magnet. Then the reaction between the current and the magnet's field will push the current always toward the swimmer's right. This rule enables us to determine the direction in which a single wire carrying a current through a fixed magnetic field will be urged by the reaction of that field, and by the same rule we can determine the direction in which a coil lying in the fixed magnetic field will be moved.

The Three Forces at Right Angles

Take a U-shaped magnet, sufficiently large that, when held horizontally, its poles can inclose the vertically hanging incandescent lamp on our droplight, Fig. 10. A magnet taken from an ordinary ignition magneto will do very well—though it may be necessary to use a small-bulb incandescent lamp. The filament of the lamp is a conductor carrying a current, dipping down and back in a loop between the two magnet poles. The current flows in at one end of the filament and out at the other; that is, through the filament from its + to its — terminal. If the current flows down the right-hand side of the filament loop, in Fig. 10, the tiny swimmer, as he starts from the + terminal and swims down this right-hand side of the loop, facing the adjoining N pole of the magnet, will be thrust by the magnet's field toward his right. This force will urge this side of the loop toward the right, but as our swimmer rounds the bottom of the loop and swims up the other side he must turn over in order to continue facing the N pole, so that the thrust toward his right will urge this side of the loop toward his left. We also further note that the directions of the lines of force of the main field, the direction of the flow of current and the direction of movement of the conductor carrying the current are all three at right angles to each other—like the thumb and the first and second fingers of the left hand, bent at right angles to each other, as shown in Fig. 11.

Now we may regard the lamp filament in Fig. 10 as a one-turn coil, flexibly supported in the field of the steel magnet, and the reaction between the latter's field and the current flowing through this coil, by thrusting the two sides of the coil in op-

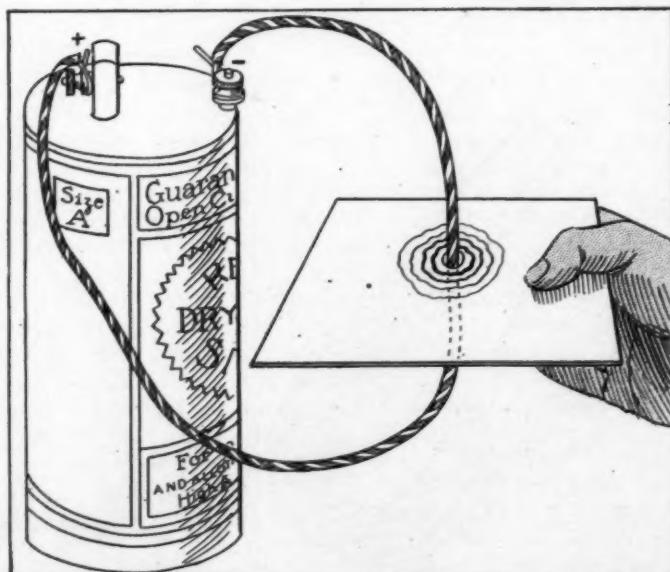


Fig. 9—Iron filings on a pasteboard as here shown prove the existence of a magnetic field surrounding an electric wire

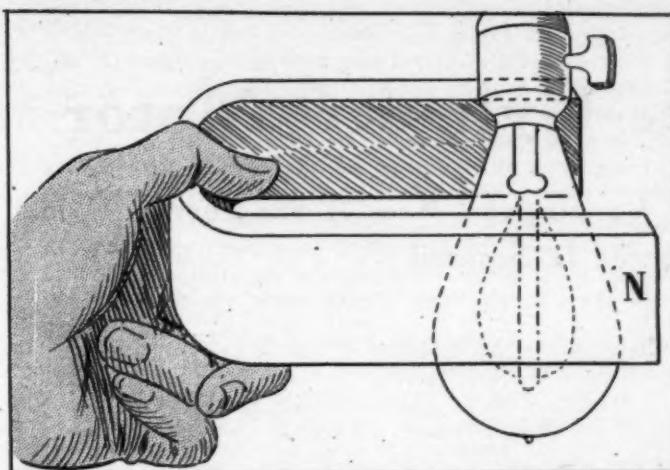


Fig. 10—Proving Oersted's rule of the deflection toward the right of an electromagnetic field when a person is imagined to swim with the current and face the N pole

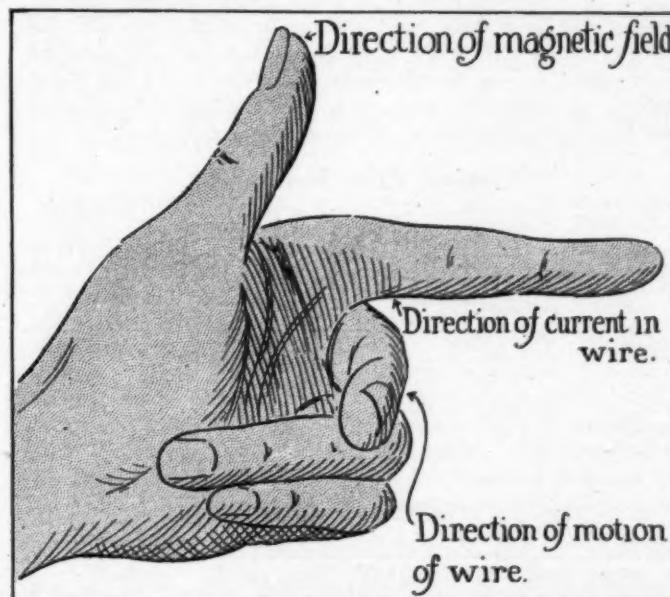


Fig. 11—Illustrating the law of magnetic deflection of a current by means of the fingers of a hand

posite directions with equal force, virtually deflects this simple coil about an imaginary vertical axis. If the looped filament has two or more turns instead of only one, or if the current flowing through it is stronger, or again if the magnet is stronger, the extent of the deflection will be greater.

Voltmeter with a Moving Coil

This experiment shows the action of the moving coil or D'Arsonval voltmeter—the construction employed in many high-grade instruments. This type of instrument, Fig. 12, consists essentially of a rectangular, many-turn coil C of fine wire, pivoted vertically on jeweled top and bottom bearings, and free to move angularly between the pole-pieces of a powerful steel magnet B, the terminals of the coil being connected to the binding posts M, M of the instrument, through a pair of delicate spiral springs D, so as to permit angular movement of the coil proportional to the voltage or potential difference in any circuit connected to the binding posts.

Rigidly fixed to the moving coil at its top is a light aluminum pointed E sweeping over a graduated scale which is calibrated in volts and fractions. Just as in Fig. 10 the loop filament constituting a one-turn coil is deflected against the stiffness of the anchored filament, because the field due to the current passing

through the filament reacts with the field of the U-shaped magnet enclosing the lamp, so here the pivoted coil is deflected against the tension of the pair of spiral springs when a current passes through its many turns, thereby moving the pointer along the scale from the zero position at the extreme left. The moving coil is of high electrical resistance, made so by the very fine copper wire with which it is wound, so that a very small current passes through it, but just as the deflection of the looped filament is stronger if the filament has more than a single loop, so here the deflecting force, or torque, on the voltmeter coil is increased by reason of the large number of turns of wire in the coil.

Harking Back a Decade

FROM *The Motor Review*, April 3, 1902:

Governor Odell has signed the Cocks bill, regulating the speed of road traffic. The chief feature of the law is a section which provides that a speed of over 8 miles an hour on any road within any incorporated city or village except where specifically allowed by such city or village; or at a rate of speed higher than 20 miles an hour outside such city or village; or more than 4 miles an hour on any bridge shall make the driver liable to be fined a maximum of \$50 on first offense and a maximum of \$50 for second offense with or without imprisonment for 6 months or less.

The Fournier-Searchmont Company has orders booked ahead which will take care of its production of five cars a day, indefinitely. The line is handled in Philadelphia by Wanamaker's, but does not constitute the full list handled by that concern. Within the past week the Mobile has been added to the line, which also includes the Baker electric and several varieties of motorcycles.

Charles B. Shanks, of the Winton company, wishes to correct the impression that has been given that the Winton concern is hopelessly swamped with orders for the new touring car. Mr. Shanks says that the new model is coming through in comfortable numbers and that prompt deliveries will be made.

A bill has been introduced in Ohio to impose a fine of \$5 on any person who meddles with another's automobile without permission.

Recent French tabulations of the causes of accidents show that the horse is responsible for 81 per cent.; the railroad 9 per cent.; bicycle, 7 per cent., and automobile, 3 per cent.

George Gould's French chauffeur and O. H. P. Belmont have been arrested recently for overspeeding, the former taking part in a bad accident. The New York *Times* in suggesting a cure for reckless driving said editorially: "There is one thing that travels faster than the swiftest automobile yet invented, and that is a bullet."

About ninety electric cabs and delivery wagons formerly operated in Boston by the New England Electric Vehicle Transportation Company, are to have gasoline motors substituted for the storage batteries.

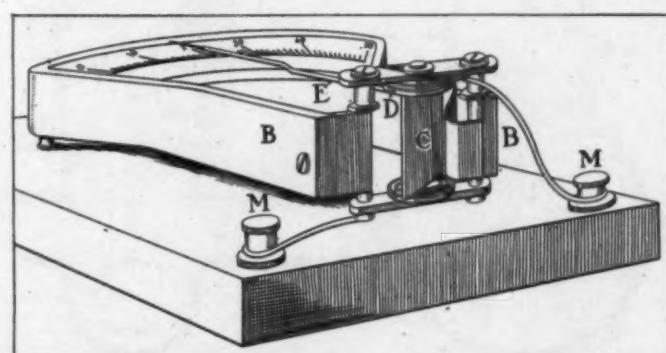


Fig. 12—The D'Arsonval voltmeter utilizing the principle of deflection of an electric wire by a permanent magnetic field

Palmer-Moore Three-Cylinder Motor

Is of the Two-Cycle, Air-Cooled Type; By Varying the Area of the Ports a Wide Range of Engine Speeds Is Secured

ENDOWED with some up-to-date and original features, the air-cooled, three-cylinder motor of the Palmer-Moore Company, Syracuse, N. Y., is presented to the automobile industry as the latest effort along two-cycle lines of design. The standard product of the company is rated at 18 horsepower, bore and stroke each being 4 inches. The motor is of the crankcase compression type, each cylinder having three ports—inlet and exhaust ports, which open practically simultaneously, and a by-pass port, which is always covered by the piston.

The principal feature of novelty in this motor is the construction of these ports, which are opened to the flow of gases when the piston approaches the outer dead center. Each port is equipped with a rotary shutter which permits of enlarging or reducing its active cross section. The importance of this feature will be readily recognized when it is remembered that with fixed-size inlet ports the range of speeds of a two-cycle motor is rather limited. The use of these rotary throttles, as they might be called, enabled the designer to evolve a motor with a relatively wide range of speed.

In Fig. 1 (A) a cross section of one cylinder is shown, evidencing the simplicity of construction. The mixture coming from the carburetor enters through the manifold I and flows through the by-pass, the size of which is determined by the rotary shutter R₁. The further travel of the gas is through a passage-way P₃ into the crankcase, where it is compressed, and when the piston P is well near the outer dead center, a port in the piston registers with one in the cylinder, P₄, so that gas is admitted to the inlet port P₁ which opens at the following instant. The rotary shutter R₂ is opened in the same degree as R₁, and the

same holds for R₃, the exhaust port shutter. All three shutters of one cylinder are interlinked so as to give the same opening. The exhaust opens but a very short time before the inlet, the angular timing relation being the same at all speeds.

The incoming mixture strikes the baffle-plate B of the piston P, being deflected toward the cylinder dome and thereby helping in the scavenging of the dead gases. The mixture enters the cylinder with a pressure of about 20 pounds, and is compressed to more than twice that during the up-stroke, before ignition occurs. The dome-shaped head tends toward efficient combustion as well as toward good scavenging of the exhaust; the waste gases, on their way toward the exhaust port, are deflected toward the latter by the baffle-plate B₁. The top of the piston carrying the baffle-plate surfaces is carefully machined to avoid dead or rough places apt to invite carbon accumulation.

Flywheel Vanes Replace Fan

Fig. 1 (B) shows the whole engine in elevation and partial section. The cylinders are bolted on to the crankcase casting, they being cast in one piece with the head. The latter is tapped and threaded at the top to take in a priming cup, while the spark-plug is located at the lowest point of the dome directly above the intake port. The rotary shutter R₂ in front of the intake port is screened to insure a complete breaking up of the gasoline globules which may be contained in the gaseous mixture, which arrangement is illustrated in detail in Fig. 4. Cooling is effected by horizontal ribs around the cylinder proper and by meridian ribs arranged around the dome-shaped head. These ribs are so cast that their two main planes are not parallel, but inclined to-

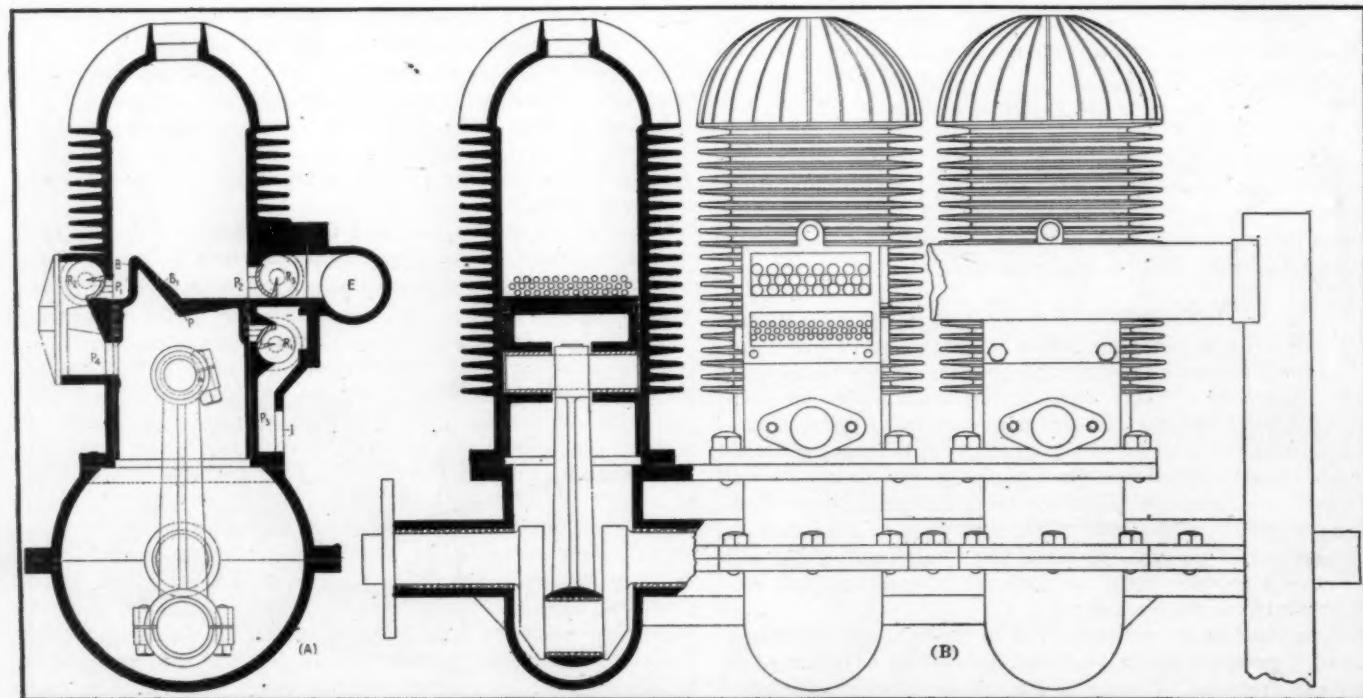


Fig. 1—(A) Cross-section of Palmer-Moore cylinder, showing the operation of the ports. (B) Elevation and part longitudinal section of the motor

ward one another, giving a greater cooling surface and being more exposed to the air striking them during the travel of the car. The main cooling air supply is furnished by flywheel vanes, doing away with the necessity of using a belt or gear-driven fan.

The bearings in the crankcase are of good size, although in this slow-speed motor the need of large bearings is not so urgent as in a higher-speed engine. Lubrication is effected by mixing the oil with the gasoline, which system has proved itself reliable in several makes of two-cycle engines. The carbureter, Fig. 4, is of an automatic type, but adjusted to a fixed opening, so as to deliver a constant-ratio mixture at all speeds. The carbureter throttle is not used at all, and the rotary port shutters take its office.

The inlet shutter scheme is shown in Fig. 2, illustrating the simple rod and bell-crank mechanism which is used to adjust the shutter. This mechanism is similar to the one used for regulating the throttle opening of a carbureter and the adjustment of any one shutter adjusts the others to the same degree of opening. The three shutters of each cylinder are operated by a vertical link *L* connected by a bell crank to the shutter-operating shaft *S*, Fig. 3. This shaft, in turn, is twisted through another bell-crank lever, operated by a wire rod from the steering wheel, much in the manner of a carbureter throttle. A direct result of the special shutter-port construction of this motor is that the operation of the shutters takes the place, in a large measure, of the work of gearshifting.

In the opinion of the manufacturers of this motor the fixed-point type of ignition ranks high among ignition systems, and a magneto of this class is furnished with each power plant. Ignition occurs a few degrees before top dead center at all speeds, giving a rigid timing system which is maintained under all operating conditions. This feature recalls one of the fundamental advantages of the sleeve-valve type of motor. The fixed-point ignition scheme permits of easy starting, without the use of a battery for this purpose; in most cases, one smart pull-up of the crank will suffice to start the engine. The magneto is driven by helical gearing, as shown in Fig. 3. The whole engine is 30 inches long, 22 inches high, 10 inches wide and weighs 318 pounds assembled complete.

Alcohol to Be a By-Product

A process of making alcohol from the waste of sisal hemp, or henequen (*Agave rigidis sisalana*), has been patented by E. D. Castro, of Tabasco, according to the United States consul in that territory. By this method the residue of the maguey is utilized after the fiber has been taken. In the process of extracting the fiber the flesh of the hemp leaf is scraped off

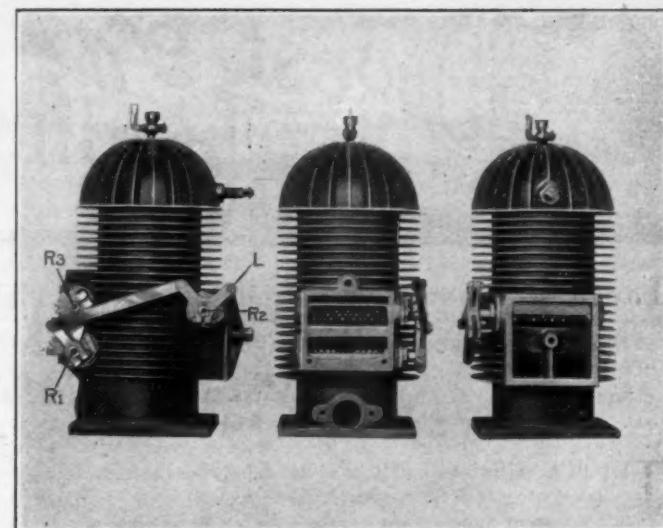


Fig. 2—Rotary shutter used for varying the active size of cylinder intake ports

by machinery, and this, with the exception of a small portion used in the manufacture of packing paper, has been heretofore simply thrown on the rubbish heap. Mr. Castro has found that this waste, together with the juice which escapes during extraction of the fiber, will produce a good, merchantable alcohol, as high as 95 volumetric per cent.

The raw material is placed in tanks with water and allowed to ferment for 2 days, after which it passes into a specially arranged still. For some time the spirit produced was unsatisfactory, both as to taste and color, but the late tests, made in the presence of some 300 of Yucatan's most prominent business men, were entirely creditable to the inventor.

Approximately, the waste of 1,000 leaves gives 88.88 gallons of juice, which in turn produces about 17.77 gallons of 95 per cent, alcohol.

With the immense territory devoted to the culture of the henequen plant in the peninsula of Yucatan and the yearly increase in the number of acres planted in this state, there should be a practically unlimited supply of the raw material. At the same time the multiplicity of uses to which alcohol is now put insures a constant demand.

PETROLEUM vehicles can be readily introduced into Asiatic Turkey, according to Vice-Consul Ojalvo at Erzeroum. They should be strongly made and should sell for \$300.

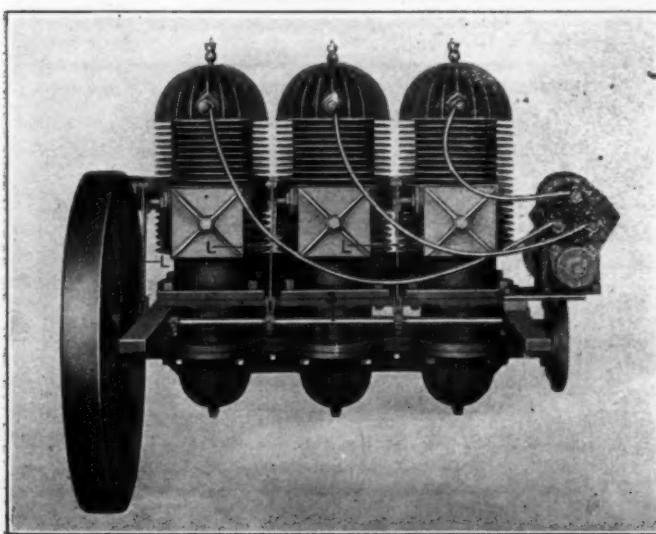


Fig. 3—Intake and firing side of the Palmer-Moore two-cycle, air-cooled motor

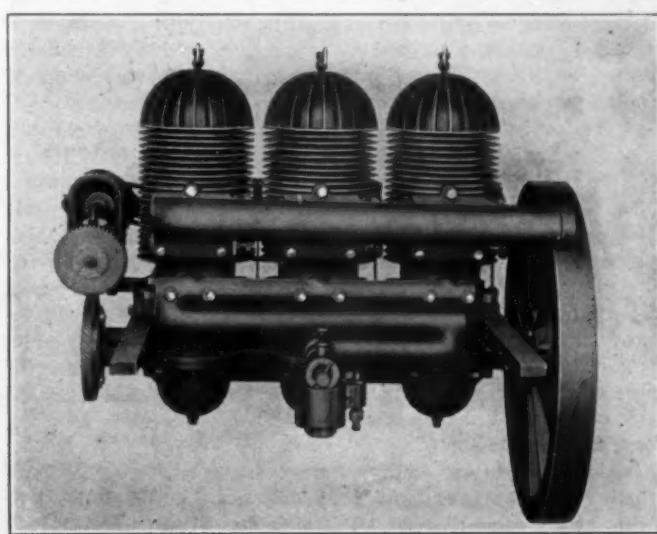


Fig. 4—Exhaust side of the Palmer-Moore motor, showing arrangement of carbureter



Tough Window and Windshield Materials Tested and Approved, But Still Costly —Microscopy Passing from Scientist to Foreman—How All May Watch the Chameleonic Molecule Change Its Spots

TRIPLE NON-SPLINTERING GLASS—Accidents have been recorded from time to time which would have been altogether avoided but for the splintering of glass windows in vehicles, and armored glass was invented with a view to avoiding the same class of accidents in burning buildings and to protect the windows in buildings adjacent to a conflagration. Such armored glass has also been used to a limited extent in Europe for the windows and windshields of automobiles, although the hexagonal wire mesh contained in this glass confuses the vision somewhat and detracts from the elegant effect obtained by the use of plate glass. Another expedient adopted for obviating the dangers of the fragile material without sacrificing style consists in the use of very heavy plate glass, strong enough to resist all ordinary shocks, such as those arising from violent slamming of a door or window, and offering the additional advantage that it may be used without a frame of any kind. The drawbacks to this method are weight and cost. Ordinary celluloid, on the other hand, is inflammable. It also lacks style when used in thin sheets, and this shortcoming is shared by the incombustible celluloids and imitation celluloids which, besides, are so new in the market that the technical difficulties in producing sheets of more than film-thickness and yet perfectly transparent have scarcely been overcome. Under these circumstances, inventors have been looking around for other means for combining safety with those requirements of style upon which the public is supposed to insist. From one of the resulting inventions a budding industry has sprung which seems to be progressing, though under many technical difficulties. The material takes the form of transparent sheets made in three layers cemented together and in which the two outside layers are glass—giving the brilliant surface that the public wants—while the middle layer is a varnished film of celluloid, giving the toughness which obviates all flying of large splinters when the material is smashed. This material is called Triplex glass and is being developed by a concern located at No. 11 Rue Desnouettes, Paris. An invention of similar purpose, which perhaps is the same at an earlier stage, was previously heralded in the issuance of French patent No. 433,148 to Paul Jacquemin, Robert Heraud and Cyprien Villedieu, and the two claims of this patent are as follows:

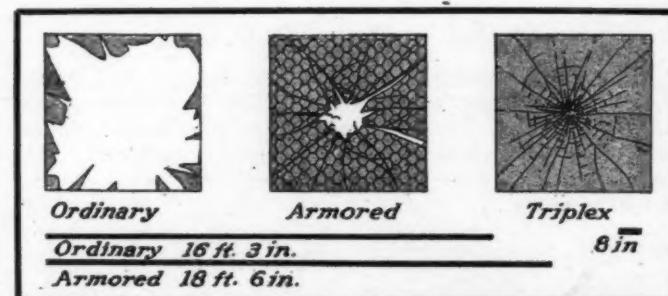
"1. The manufacture of a product similar to glass, as regards transparency, but insoluble and unbreakable; this product being composed of a sheet of which the core is formed of gelatine or any other plastic and translucent material, and this core being covered first with a film obtained from a derivative of cellulose, and finally with a varnish.

"2. The combination of the above product with a sheet of glass effected by applying the product of the invention either on only one side of the sheet of glass or on both sides so as to form a composite glass."

It does not appear with certainty from the data at hand whether the two inventions are identical or different developments of the same thought. The patent speaks of one sheet of glass between two sheets of tough transparent material, while the Triplex glass is represented as one sheet of tough material

between two sheets of glass. And it is said that the Triplex is patented in Germany and the United States. The accompanying illustration shows the results of experiments undertaken with the Triplex product to ascertain what measure of safety it affords, as compared with ordinary glass and glass armored by means of cast-in wire netting.

A ball weighing about 2 pounds was suspended by a cord in front of a frame containing successively panes of ordinary glass, of armored glass and of Triplex glass, and in each case the ball was raised through an arc of 90 degrees and then allowed to drop back against the pane, smashing it. The glass was of the thickness commonly used for automobile windows and doors, which is 5 millimeters, while the armored glass was 7 millimeters thick and the triple glass 6 millimeters. Measurements showed that the three materials gave respectively 80, 30 and 2 per cent. of splinters, counting only what was thrown out of the frame in each case, and that some of the splinters of the ordinary glass were thrown over 16 feet, some of those of the armored glass, while much smaller, were thrown even 18 feet 6 inches, but that the small particles of the composite glass which were loosened all fell within a distance of 8 inches from the frame. Repeated trials confirmed these results.



How three kinds of glass smashed, and the distance the splinters flew

The new material has presented many difficulties. The cementing of the glass and the celluloid under hydraulic pressure has called for the development of new technics and shop kinks. Air bubbles and scratches still cause the discarding and waste of many sheets and therefore a high price, and, worst of all, the fitting of the material to varying shapes and dimensions is most laborious. Straight out lines can be cut by using a diamond first on one of the glass layers and then exactly oppositely on the other, then completing the cutting of these layers by placing the whole sheet on a hot plate so as to make it crack through along the lines of the cuts; and finally bending the sheet to and fro until the central sheet of celluloid also breaks along these lines. In order to fit the material to a curved contour it is still necessary to shape the glass layers and the celluloid layer separately and before they are cemented and pressed together. Those who order this product for automobiles generally insist that one or both of the glass layers shall be perfectly plain plate glass,

which is necessarily thicker than ordinary window glass, but more regular and brilliant in its reflections, and therefore more elegant, and in this fact the principal difficulty in introducing plates formed of incombustible celluloid only, which is perhaps not as nearly proof against scratching as glass, seems to be suggested.—From *Revue de Chimie Industrielle*, February, and *Omnia-Locomotion*, March 9.

Machine to Polish Test Pieces—It has been said that the scientists of metallurgy have received their best inspirations while engaged in the tedious and time-consuming task of polishing by hand little bits of steel in preparation for etching, photographing and microscopic examination, but when metallurgy entered the factory, where time is counted worth money, it became necessary to get this work done more expeditiously, and *Engineering* of December 29 now describes a lit-

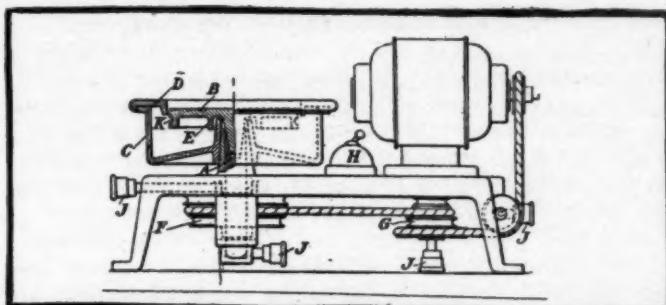


Fig. 1—Machine for the polishing of an etching-facet on small metallic test pieces

tle machine designed with this purpose in view. It comprises a vertical shaft A driven by cable over pulleys F and G, which in turn take their movements by means of another cable run over auxiliary pulleys from the shaft of an electric motor mounted horizontally on the bed plate of the machine. Upon the upper end of the vertical shaft A there is mounted, by a cone joint, a plate B, with a concaved rim K in which the edges of the emery or other polishing cloth stretched over the plate may readily be secured, and a flange E serves to prevent the gritty dust of the polishing material from reaching the shaft A. A stationary cup C receives the dust which works off from the edges of the rotary plate and the ring-flange D is screwed to the top edge of this cup and prevents a test piece which might slip from the operator's hand from dropping into the dust receptacle or to the floor, while also acting as a guard protecting against injury from the revolving edge of the rotary plate, against which the work is held by hand. H is a switch for starting and stopping the motor and may be connected with a circuit of resistance lamps, on direct current, for regulating the speed of the turntable to the nature of the work in hand, different speeds and pressures being required. Pressure cups with consistent grease are located as indicated by letters J.—From *Génie Civil*, March 9.

Making Steel Structure Visible—Even those not at all familiar with metallurgy as a science may now employ microscopic examination of metals as a valuable aid for insuring or establishing reliable work methods in the shop. The main requirement is a certain practical familiarity with the best processes in the preparation of test pieces. The test piece must be taken from a place where it is certain that the structure of the metal is identical with that of the part whose quality is under examination. It must be severed by means which do not change its structure, preferably sawed out or cut out with a thin grinder disk and with ample provisions for cooling. It should then be reduced to dimensions of about 10 by 10 by 5 millimeters on a not too rough grinding machine producing only plane surfaces. In the fine grinding of the piece, which must also be carried out under constant cooling with oil, it is to be observed that the

scratches made by the abrasive material should not form a criss-cross network of lines, as such a marking can be reduced to a uniform mirror polish only with great waste of time. The subsequent polishing of one facet of the test piece may be accomplished with six grades of emery cloth. The six cloths may be disposed of on both sides of three wooden or cast-iron disks all mounted with suitable intervals on one shaft of such length that it may be conveniently clucked upon a lathe. By this arrangement, the test piece may be taken from one grade of emery cloth to the next finer one in one continuous operation, and much time saved. If the work is done by hand, the emery cloth is fastened upon a horizontal plate and the test surface is rubbed to and fro with light pressure. From 200 to 400 hand movements are usually required for each grade of the emery cloth. At this stage of the work it is best to turn the piece 90 degrees when taking it from one grade of the cloth to the next one and to change cloth as soon as all the lines made by the previous grade have been effaced. After the emery polish comes the final buffing with red polishing powder or rotten stone evenly distributed over a cloth-covered polishing plate. In this operation the piece should be constantly turned around and the rubbing should be continued until no more marks from the polishing material are visible under a microscope.

The polished surface does not yet permit observation of the metallic structure. The design of the structural lines must be developed, and for this purpose different methods are used, according to the nature of the material and the object of the examination. One method is mechanical and consists in polishing away the softer portions of the polished surface and thereby making the harder portions come out in relief. To this end fine polishing powder is usually spread over a soft, elastic rubber plate, and the polishing is continued with frequent inspection under the microscope, as the process may easily be carried too far, creating an unevenness of the surface which interferes with successful photographing by reason of confusing light reflections from the differently inclined portions of the surface. This so-called relief-polishing method may be carried a step further by adding an etching substance to the polishing powder, which in some cases results in the advantage of different colorings for the different elements in the structure. Carbide groupings in steel are particularly well observed by the use of this method.

Oxidation offers means for bringing out the structural design still more plainly, especially if phosphides as well as carbides are to be observed. The test piece is placed on a heated plate until the oxide colors appear. Some portions oxidize more rapidly than others, and the phenomenon of light interference, produced by the thin layers of oxide of varying thickness, helps to differentiate the appearance. When a desirable color effect is produced, the piece is cooled in mercury and the colors are thereby fixed. A scale of decisive comparisons may be established by this method, which by growing experience becomes very valuable and practical. Etching may be used simultaneously with it, and in this matter different heat treatments of the same material are very easily recognized.

When etching is used without relief-polish it is doubly necessary that the polished surface should be carefully cleaned in alcohol first, and to establish comparative valuations it is, of course, necessary that the strength of the etching substance, whether acid or alkaline, should be uniform and that the exposure to its corrosive effects should be timed. There is considerable choice in the chemical composition of etching fluids, and the adoption of a definite and unvarying system in their use is of greater importance than the selection of the most efficient one in each instance.—From article by Rolf Sproecke in *Werkstattstechnik*, February 15.

Clément-Bayard Using Knight Engine—Arrangements have been concluded by which the Clément-Bayard automobile works will hereafter receive Knight-Daimler engines from the works of the company of this name and will equip certain models of Clément-Bayard cars with them in the future.



Manufacturer Must Consider the Owner Who Drives; Explaining High-Tension Wiring Systems; A Cure for Overheating; Pointers in Radiator Painting; Getting Home on a Bad Tire

Evidently Likes Left Control

EDITOR THE AUTOMOBILE:

Nine years ago I purchased my first automobile, the first completely equipped two seater in the city. It was steered by wheel from the right side, but the clutch lever was so placed that the front seat was accessible from either side, and, as it could be cranked from either side, it was not necessary for the driver to go into the street to enter the car. The occupants of the tonneau were less fortunate as it had to be entered from the rear and passengers had to go into the street to get in, or else the car was backed up to the curb like a hearse.

Four years later I bought my next car and as its tonneau had side doors, it was a great improvement—for the passengers.

But how about the driver? No matter what the condition of the street—mud, snow, slush or water—he had to go around in front to crank and, if the right side was next the curb, clear around the car to take his place at the wheel. It seems to me it is about time that builders of up-to-date cars should give a little more attention to the man at the wheel.

Traffic regulations in most of the larger cities compel all vehicles to stop with the right side to the curb and, in the majority of cars, the present arrangement of steering wheel and levers makes entrance to the front seat impossible from that side. With lights which can be lit from the seat and a reliable self-starter, there is no more reason why automobilists should be compelled to go out in the street to get to their seats than there is for the occupants of the horse-drawn high-wheelers. The year 1913 is going to be a lucky year for the manufacturers who depart from established lines and make it a point to consider the comfort and convenience of the owner chauffeur.

Springfield, O.

M. E. G.

Pittsburgh to Memphis Route

EDITOR THE AUTOMOBILE:

Would you inform me the best route from Pittsburgh, Pa., to Memphis, Tenn.? In what condition are the roads in Kentucky and Tennessee ordinarily? I would like to make this trip during the latter part of June.

Pittsburgh, Pa.

L. F. Post.

The best route would be through the following cities: Wheeling, Columbus, Cincinnati, Lexington, Louisville, Mammoth Cave, Nashville and Memphis. The road from Wheeling to Columbus is the old National Pike. It is a stone road and is in very fair condition; from Columbus to Cincinnati is mostly good gravel; Cincinnati to Louisville mostly macadam; Louisville to Nashville, very fair dirt roads; Nashville to Memphis, roads under construction, being very good and very bad in spots according as the construction of the particular section of road is completed or not. Summing the matter up, this is a very satisfactory tour and should prove a great success in the latter part of June, when the roads are in fairly good condition and the weather is likely to be favorable.

High-Tension Ignition Wiring

EDITOR THE AUTOMOBILE:

Would you kindly explain to me the difference between the terms single and dual as applies to the high-tension ignition systems now in use? What is the difference in the wiring of a single high-tension magneto system and a dual system as made by any of the well-known concerns? Could this be shown diagrammatically? If so, kindly reproduce such a diagram.

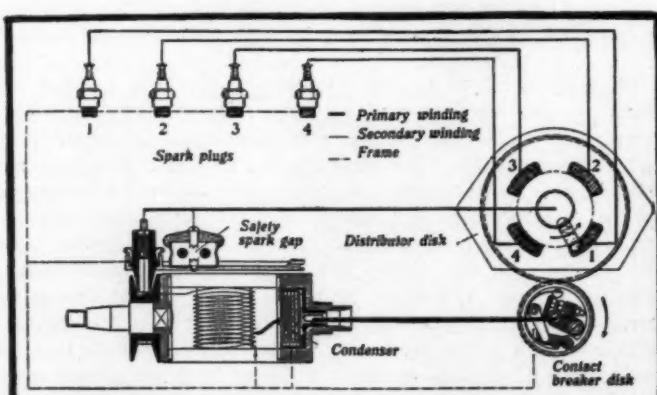
New York City.

J. EDWARDS.

The difference between the single high-tension magneto system and the dual system is that in the former, no batteries are employed, the sole source of the current being the high-tension magneto, which is so designed that the spark at low speeds, such as given by cranking the motor, is strong enough to ignite the charge. It is therefore possible to start upon the magneto and not to rely upon any other source of supply for ignition purposes. It has the great drawback that if anything went wrong with the magneto, the car would be stranded until the magneto was repaired.

The dual system has two sources of electric current, namely the magneto and battery. A single set of spark plugs is employed and the wiring is so arranged that either source of supply may be used for igniting the charges. A two-point switch located upon the dash forms the means of making the change from the battery to the magneto or *vice versa*. Should either system break down, the other may be used to operate the motor and the driver would thus be able to get his car home without trouble, as contrasted with the single system just described.

There are other methods which are also used to provide two sources of electric current. The two independent systems, in which two sets of spark-plugs are used, rendering the two systems absolutely independent of each other throughout, is also used. The double system, which is very familiar, is very much the same as the two independent systems except that the same timer and distributor are used for both magneto and battery cir-



Wiring of single high-tension system with magneto alone

cuits. In accordance with your request the wiring diagrams of the single and dual high-tension systems are shown herewith, Figs. 1, 2. The diagrams are constructed according to the practice represented by a prominent concern which specializes in this work.

Draining Kerosene from Motor

Editor THE AUTOMOBILE:

In your issue of March 14, page 718, referring to the article on "How to place your car in commission," where and how can I drain a Continental motor, Marion 45, of kerosene, as mentioned in article, if I fill up cylinder and let it stand a couple of days?

Also, after cleaning out old oil in the transmission and differential, how can I wash them out with kerosene as mentioned in your article?

A. P. BAUER.

Chicago, Ill.

After placing the kerosene in the cylinders open the petcocks and allow the motor to stand as long as possible. Nearly all the kerosene will be found to have worked its way past the piston and down into the crankcase by this time. The remainder can be blown out through the petcocks by spinning the motor. You will no doubt find some difficulty in starting the motor after this treatment if you have not allowed the kerosene to soak past the piston long enough, but by vigorously spinning the motor with the petcock open, you will blow out the remaining kerosene. When the motor starts, open the cut-out, as there will be a considerable amount of smoke which would make the muffler sooty if the cut-out were not open. The kerosene which has passed down into the crankcase should be drained out after the motor has run for a few minutes. Fresh oil should then be put in the filler hole and the motor run for a time.

Pour kerosene into the gearbox and differential housing until there is as much in the casings as they will hold. Then take the car out and run it for about a 1-2 mile in this condition. Open the drain plugs and let all the kerosene which will come out drain where it will do no harm, as in a pan. Next pour a little gasoline into the casings and allow that to stand a while before draining; about 5 minutes will suffice. After this is drained out, refill with new lubricant.

To Cure Overheating Trouble

Editor THE AUTOMOBILE:

I have a water-cooled car and have over-heating trouble after running a short distance. The oiling system and cylinders and pistons are in excellent condition and thoroughly cleaned. The cooling system is of the thermo-syphon type, but the water we have to use is very muddy at all times and I think it forms a scale in the radiator and water-jackets.

How would soda ash do if put in the water and allowed to circulate through the system? They use it here in the water to dissolve scale in boilers used around the mines. Would it injure the radiator or rubber connections? If this will do the

work or if it will not, will you please give me some formula which I can use in the water to dissolve this mud sediment, and the amount of soda ash to use. (2) What grade oil is best adapted to an air-cooled motor?

Montgomery, West Va.

W. C. ABSALOM.

(1) Soda ash, which is just another name for washing soda or sodium carbonate, is very good for the purpose of flushing out the radiator. The correct amount to use would be a heaping handful to a pail of water. Heat the water to a boiling temperature and then pour it into the radiator. Allow the motor to run a minute or so and then drain. Refill with pure water. Many people who live in localities where it is hard to secure pure, clean, soft water, provide a means of catching a supply of rain water from the garage roof or any other place where a large area is exposed to the falling water. Rain water is soft and contains a minimum amount of lime and the other impurities which tend to make scale in the radiator. The scale which forms about the surface of the metal is a very bad conductor of heat and hence the efficiency of the radiator is seriously impaired. Another important point which should not be overlooked in considering a radiator that does not cool the water sufficiently is that oil will sometimes gather on the inside cooling surface. Oil is also a poor conductor and acts in the same manner as scale. The soda will remove oil also if it is used in conjunction with boiling water.

(2) The specifications of a good oil for air-cooled motors are as follows: Flash, 450 degrees; fire, 500 degrees; cold, 30 degrees; viscosity 325 on the Sayboldt viscosity meter; gravity 25 on the Baumé scale.

Secret Is in Rough Surface

Editor THE AUTOMOBILE:

Permit me to inquire through the medium of your valuable publication, as to the best preparation to use as first coatings upon a brass radiator (when repainting) when the previous coats have been entirely scraped off. The trouble I have heretofore experienced is that it will peel or chip off easily when tapped even lightly with other bodies.

I also wish to make a suggestion that might be appreciated by some of your readers: I have found that a coin bag, which may be secured from any bank without cost—one that is intended to hold \$500 in silver—makes an excellent bag for inner tubes. These bags are made from heavy canvas and have a string attached with which to tie them.

Spokane, Washington.

E. W. EDGINGTON.

The secret of success in painting the radiator is to first roughen the surface of the metal with a sheet of fine sandpaper. The coats of paint applied to the radiator should be very thin. If these directions are followed any plumbing paint will give good service.

Saved His Rim and Tire Shoe

Editor THE AUTOMOBILE:

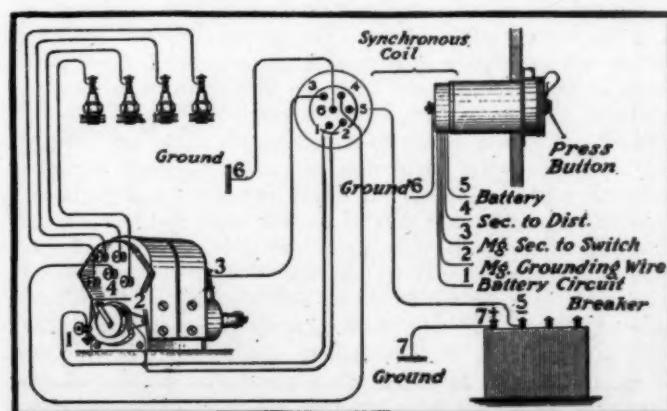
Realizing the value and interest afforded by articles on quick repairs, I hereby submit one of my experiences on the road last summer.

I had started out for a short spin in the country, and was fully 10 miles from the nearest garage when my rear tire punctured. To my dismay, I found that all my tubes had been left in the garage to be repaired. Thus I was practically stranded. I knew that I would ruin my shoe if I ran home on it, and that my rim would be useless after such a long run. After thinking over the matter a few minutes, I hit upon a plan, which proved successful.

I had a canvas car cover which was under the rear seat. Why couldn't that be used to take up the space of a tube filled with air? After taking out the tube and substituting the cover, by stuffing it around inside the shoe, it not only served me well, but proved to be an efficient shock-absorber.

East Orange, N. J.

I. G. NATZ.



Wiring diagram of dual high tension as used by Bosch

How to Place Your Car in Commission

Part IV

Private Owners' Preparations for the Coming Season; Overhauling the Lighting System; Cleaning and Lacquering the Brasswork and Accessories; Removing Rust from Parts

ASSUMING that the motorist was careless and did not take the rubber tubing and other parts of his acetylene lighting system off the car in the fall and put them in a place where they would be safe against the ravages of cold and wet, he is very apt to have a big job on his hands to restore them to good condition. The generator should never be allowed to stand with stale or partly-used carbide in the chamber as the owner will find that the water and waste ports will be choked up with residue in the nature of lime deposits. These are so hard that they will have to be removed by means of a cold chisel and scraper. The rubber tubing should be tested by pulling upon it gently. If it breaks without stretching, new tubing should be purchased at once and the old tubing replaced.

Porous connections and clogged burners may be detected by turning on the gas and attempting to light the burner. If the flame is small, a lighted match should be tried along the tubing, being careful that the flow of gas has been sufficient to drive all air out of the piping and that there is no gasoline near by to take fire in case a large leak should be found. If the tube is porous a large number of small, sputtering explosions will be heard, that will inform the repairman that there are many very small leaks present, but that none of them are large enough to burn steadily. If there is a large leak, the gas will, of course, ignite at once and remain lit. In either circumstance, the tubing will have to be renewed. If the trouble is not in the tubing, and the generator is cleaned out, the only thing remaining to be examined is the burner. The clogged burner may be scraped with a file; the rest of the deposit can then be taken from the burner hole by means of a short, stiff wire. The steps in the cleaning of the acetylene burner are shown in the accompanying illustration. The tip is taken from the lamp and placed in a vise. A light file is then run over the surface of the burner, A, until it is filed smooth on all sides. The holes are cleaned out with a very fine wire, B. As a rule, the holes in each branch of the Y-shaped burner are three in number, the first and largest of the three being found on the inside of the branch. This is the hole through which the inflammable gas flows while the lamp is in use. Through each side of the branch of the Y a hole is drilled leading slantwise up to the hole through which the gas flows. It meets the gas passage at the point where the latter leaves the inside of the branch. The purpose of these two small passageways is to allow air to flow through the burner-hole mixed with the acetylene to secure the maximum illuminating power. It is very important that these holes be cleaned out and very fine wire is required for the purpose. The gauze screen in the burner tube is cleaned in the same manner, as shown at C.

Testing the Tubing for Leaks

If copper tubing is used in connection with the lighting system, the joints should be tested with a match, D, in order to determine if they have deteriorated or become loose through vibration. If found defective, the old joint is rubbed bright with emery and the connection is resoldered. A solder known as soft solder, consisting of one part lead to two parts tin is satisfactory in jobs of this nature. Before the solder is put on the joint,

some zinc chloride should be painted on the parts to be soldered. This is known as the flux. It is put on in order to prevent the metal, which has been scrupulously cleaned before soldering, from oxidizing and thus preventing the solder from holding.

Before leaving the subject of gas lamps and lighting outfits a few additional tips regarding the care of the generator may be given. The first and most important is that the generator should not be overhauled in the spring and then allowed to go without care during the rest of the season. After every trip the carbide basket and pot should be cleaned out with pure water. All traces of lime are removed at this time. The water valve should next be cleaned so that it seats properly. Do not scrape the valve roughly as the seating may be damaged if this is done. This also applies to the gas valves, which are even more delicate. The generator should be placed on the running board just back of the change gear device. In this position it will be kept cool, a condition very desirable in the case of gas generators.

Examine Electric Light Plant

W here a metal reflector is used in connection with an acetylene light in place of the glass-covered type, it is very often necessary to resilver it. This is a job that is very delicate and is better done by the manufacturer than by the amateur. In case it is desired, however, to undertake the work, the method described in last week's issue of *THE AUTOMOBILE* will be found suitable. Where the glass-covered, or lens reflectors are used, resilvering will not be found necessary. The glass will have to be wiped with a soft cloth dipped in a little warm water.

The electric lighting system, if it is used, does not require much in the way of overhauling. An examination of the wiring and the switch is usually all that can be done, outside of having the storage battery recharged. This will not always have to be done for the storage battery will not have been left standing uncharged all season if the motorist is wise. Nothing can be worse for the battery than to allow it to stand idle with the charge exhausted. It is far better to allow it to discharge gradually. In this way it will not be impaired nor its life shortened. The dynamo will generally be found to be in good condition. If it is old and out of order the best place to have repairs made is by the makers of the dynamo themselves. Electric light reflectors will not require more than a mere wiping off to put them in the proper shape as there is no hot flame to oxidize them or cause the silvering to flake from the reflector.

The brass fixtures on the dash, such as the clock, speedometer and other accessories which may be readily removed, are generally taken off the car when it is laid up for the winter. If the motorist has neglected to do this, he will often find that a layer of verdigris has spread over the polish which made the brass-work glisten the last time the car was in use. If this layer of verdigris is very thick it would be well were he to take all the parts off the car and take them to some shop where a buffing wheel was available. It is possible to remove the spots with the aid of brass polish and some elbow-grease, much more of the latter than the former being required, but the deposit is so stubborn in most cases that it will defy the repairman's efforts and

temper for such a length of time that he could have done better by having them buffed in the first place. The cost of this is small and little time is required. The ideal proceeding is to take the brass-work from the car when it is laid up for the winter. This applies not only to the dash accouterment, but also to the lamps, generator, horn and the brass knick-knacks which are placed here and there throughout the car.

Many car owners desire to give up the high polish and to have the brass-work finished in black. It is very easy to apply a black finish which will be found satisfactory to the brass parts on the car without sending the latter to a regular repair shop. Money can be saved by this method and, at the same time, a highly satisfactory job can be turned out. A few recipes for blackening brass parts are given herewith.

The first method, which gives a rather highly-polished finish in any color desired, is as follows: The surfaces are first carefully polished and then freed from every trace of grease. A lacquer is then applied. The lacquer may be prepared thus: Bleached shellac, 60 grams; Manila copal, freshly powdered, 60 grams; gum mastic, 60 grams; absolute (grain) alcohol, 1 kilogram; coarsely powdered glass, small quantity; allowed to stand (frequently shaking) for 14 days; boracic acid, 1 gram. Filter and use, the best plan being to apply repeated thin coats.

Any desired color may be given to the lacquer by adding aniline dyes. A very little of the dye of the color selected will serve for the purpose. Red and blue will form clear solutions; green must be handled cautiously; it may be have to be filtered; yellow is a good dye to handle. In applying lacquers it is desirable to go about it in the same way as shellac is applied—thin coats, deftly applied by means of a suitable brush, with very little rubbing; it will become tacky if it is rubbed very much.

Method of Darkening Brass

Another method of darkening brass which has met with considerable favor is as follows: Dissolve 100 parts of copper nitrate in from 100 to 200 parts of water. If possible, the solution is contained in a vessel large enough to permit of immersing the part to be oxidized. If the part is too large to follow this plan, it may be painted with the solution and the results obtained will be found just as satisfactory. After having immersed or painted the part, the solution is drained or shaken from it. The article is heated to decompose the copper salts into a black copper oxide. The heating may be carried on over a clear charcoal fire or in a closed muffle furnace.

After the brass has been polished and it is desired to lacquer it in order that it may preserve its polish, the first recipe is followed with the exception that no coloring matter is added to the lacquer. This will then be transparent and very efficient in forming a protecting coat over the polish of the brass. It is very desirable to follow this plan with the rims of glass windshields.

These become rusted very quickly, if not protected in some manner. The horn may also be lacquered to good advantage, although the present practice is toward placing it inside the bonnet. Still, a clean horn is much more efficient than a horn which is partially choked with foreign matter. If the horn is protected by means of a screen, the screen should be removed and cleaned with gasoline. The cleaning will be more thorough if it is done with a brush as the bristles will then get into the meshes of the screen and remove the dirt which would otherwise probably remain. The screen should, of course, be removed from the mouth of the horn projector and the projector itself cleaned with gasoline by merely wiping the inside with a soft cloth.

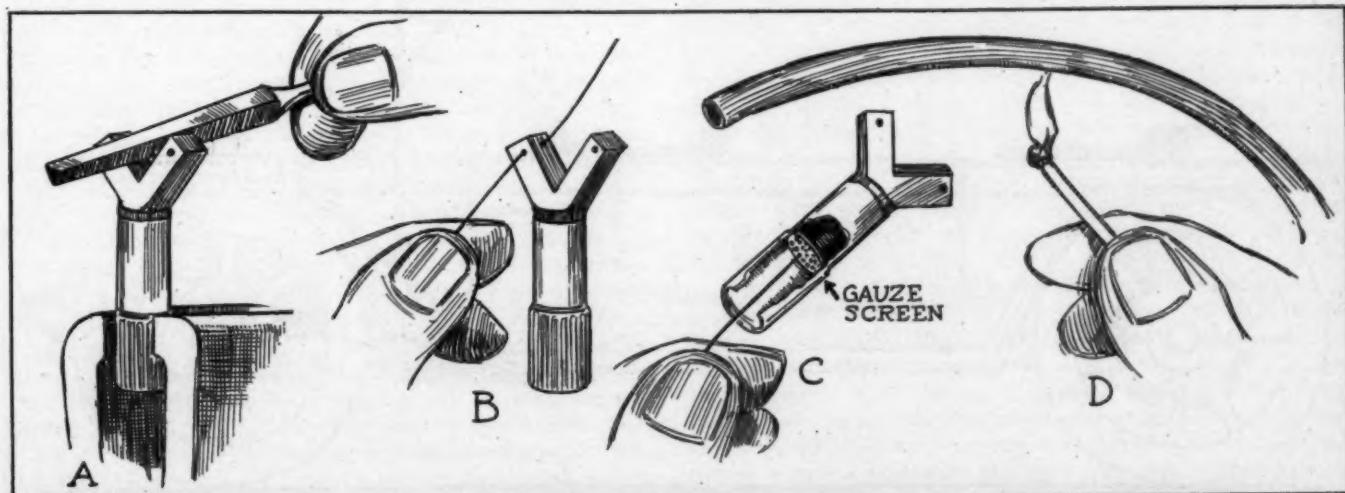
Applying the Finishing Touches

The other metal parts should be examined for rust. If the paint has come off any parts of the car and the metal in these parts has become rusted the rust should be removed with kerosene before they are repainted. If this is not done the rust will flake off and take the paint along with it. The part will then rust again and in a short time will be just as bad if not worse than it was before. Rust and rubbing constitute the best formula for removing rust and by this means the worst cases will be amenable to treatment. Directions for painting the parts which are large enough to require careful treatment have been published in these columns on several occasions, but the fact remains that when large painting is undertaken in the line of carriage or automobile bodies the facilities required for making a satisfactory job are so many that the amateur cannot hope to equal his professional brother with a fully equipped paint shop at his disposal.

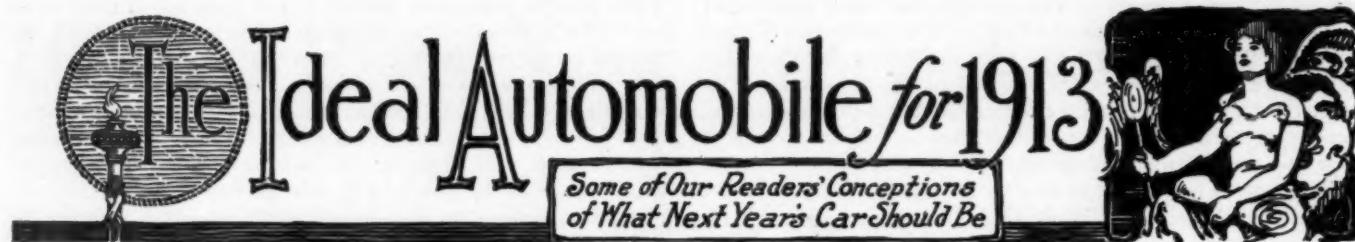
Finally, the floor rugs should be taken out, the rubber floor-mat looked over and replaced if worn, dash cleaned with a damp cloth and given a coat of varnish, license plate attached, tires pumped to the proper pressure, the oil and gasoline supply renewed, and the car is ready for service.

Tire Tip to Touring Tyros

Underinflation is a well-known tire-destroyer. Besides shortening the life of the tire, the automobilist who neglects to properly pump up his tires is submitting the rims of the wheels to a cutting action which is often very serious. The beads of the tires are apt to cut the inner tube when the tire is not hard enough and another thing which often happens is that the casing cracks on account of being worked constantly up and down in one spot in exactly the same manner that one employs in breaking a wire. The tread becomes loose on the casing when the tire is not kept up to its proper pressure and when the tread begins to have a wavy appearance it may be readily known that the owner has been neglectful in this respect.



A, scraping clogged burner; B, cleaning holes; C, clearing gauze screen; D, testing for leaks in connections



Likes a Straight-Line Body

EDITOR THE AUTOMOBILE:

After having read the descriptions of ideal cars published in THE AUTOMOBILE for several months I venture to submit some general specifications for a car which I might call my ideal.

In the first place, I would have a four-cylinder, water-cooled motor which would develop about 30 horsepower. This would be ample for either town use or touring and the small size of the motor would permit of a short bonnet and a consequent increase of space in the body. I would use a leather-faced cone clutch provided with a grease cup for lubricating purposes and a three-speed, selective sliding gear transmission. There would be one universal joint at the clutch, of course, and there would be one at each end of the driveshaft.

Right-hand control appeals to me more than the newfangled variations used in so many cars today. The steering wheel should be 18 inches in diameter and the post should be at least 1 1-2 inches in thickness. The springs should be very long and slung under the axles, as this lowers the center of gravity without bringing in the element of possible danger which some other constructions might entail.

As regards the body, I would adopt one or two innovations. For instance, I would have a baggage compartment in the rear of the back seat, as shown in the accompanying sketch. This would be readily accessible and would be provided with a suitable cover. I would have the dash free from all encumbrances, the battery box, etc., being stowed away either under the seats or fastened to the inside of the frame. The body would be a straight-line type with invisible hinges on the doors. Fore-doors would be fitted and easy riding would be insured by shock-absorbers all around, and a platform spring in the rear. The seats should be straight-backed as in a carriage. The fenders and mud-guards also should be of straight-line design.

The equipment should include all the usual paraphernalia—speedometer, clock, folding windshield, top, side curtains, tools, etc. Such a car should sell for about \$2,000.

Denver, Col.

R. D. BENSON.

Wants Six-Cylinder Torpedo

Editor THE AUTOMOBILE:

Noticing, as a subscriber, that the interesting topic the Ideal Automobile for 1913, is still continued, I would like to submit my ideal car the coming year.

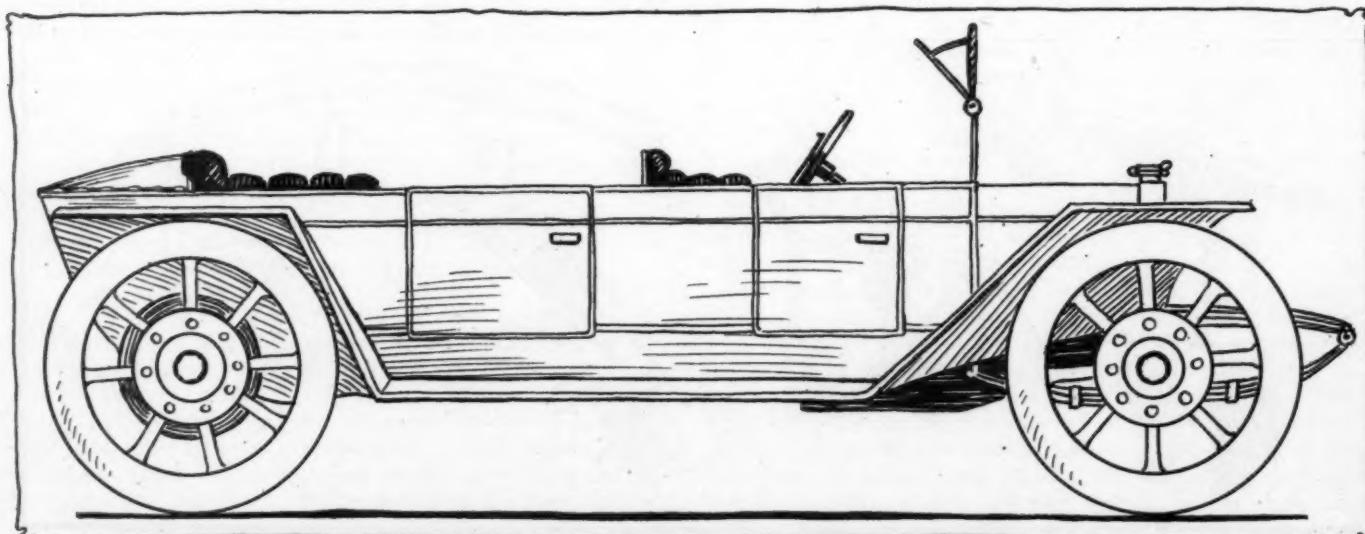
The motor should be of the six-cylinder T-head type with the cylinders cast in pairs. It should have a bore of 5 inches and a stroke of 7 inches. Valves should be 2 3-4 inches, with inclosed stems. Seven bearings should be used in the crankshaft and the camshaft. A Bosch high-tension magneto with a storage battery and two sets of spark-plugs should be used in the ignition.

Lubrication is provided by positive force-feed together with splash for the cylinders and a gear pump, the oil tank having a capacity of 3 gallons, with a sight-feed on the dash. A cone-type leather-faced clutch should be used. A radiator of the tubular and plate type with a gear-driven pump comprise the cooling system. The transmission should be of the four-speed, selective type, mounted on ball bearings with direct drive on the third speed. The gasoline supply should be under the front seat in a 25-gallon copper tank. The steering gear should be of the worm and sector type with a 20-inch steering wheel notched for the grip of the fingers. The spark and throttle levers should be on the steering wheel and an accelerator should be provided.

According to my ideas of modern design, this car should have left-hand drive with the control levers in the center of the car. The body should be steel of the torpedo design and capable of carrying seven passengers comfortably. The Delco lighting system should be used. I should want a four-cylinder air pump attached to the flywheel so that no time would be lost in repairing. There should be a place in the rear of the car for the tool-box and extra tires and rims. There should be a Warner auto-meter with a clock. A Klaxon horn should be part of the equipment of this car as well as a gasoline gauge on the dash. A storm-tilt wind-shield should be included. The car should be capable of a speed of 65 to 70 miles an hour and should weigh about 3,800 or 4,000 pounds. The price should be about \$3,500.

Augusta, Ga.

ROBERT G. SMITH.



Type of car with straight-line body which appeals to R. D. Benson

Foreign Possibilities for American Makers

Trade Opportunities Abroad as Indicated by the Government's Daily Reports from Consular Stations

TAXICABS—A European company is interested in the subject of American taxi-automobiles and desires to get into communication with manufacturers. It is probable that this company will secure taxicab concessions for two or three of the large cities. Two other firms desire to represent American manufacturers of motor vehicles. Bank references will be furnished. Copy of the consular report will be sent to firms writing with reference to File No. 8,291, Bureau of Manufactures, Washington, D. C.

CHEAP AUTOMOBILES—A business man in Siberia informs an American consulate that he desires to receive catalogues with prices and export discounts covering cheap automobiles. Correspondence should be in Russian. File No. 8,319, Bureau of Manufactures, Washington, D. C.

AUTOMOBILES IN MEXICO—An American consular officer in Mexico reports that a company in his district has secured a concession from a state government for the construction of a hippodrome. It is understood that several new automobiles will be purchased and that the company will be in a position to represent foreign manufacturers of automobiles and carriages. File No. 8,283, Bureau of Manufactures, Washington, D. C.

TRADE IN AUTOMOBILES—A foreign business man says that his firm is desirous of corresponding with American manufacturers of automobiles. Correspondence and catalogues may be in English. File No. 8,274, Bureau of Manufactures, Washington, D. C.

AGRICULTURAL MACHINERY, OIL AND GASOLINE ENGINES—A European merchant is anxious to receive catalogues and price lists of all kinds of gasoline engines. Correspondence may be in English, but it is desired that catalogues and prices be in French or German, if possible. File No. 8,273, Bureau of Manufactures, Washington, D. C.

AUTOMOBILE ACCESSORIES—A Mediterranean importer of automobile accessories is anxious to increase his business with the United States, and invites offers and correspondence from leading American firms manufacturing all fittings of any kind applicable to automobiles. Best of references. Will make payment upon any terms required by American firms. Correspondence should be in Italian or French. File No. 8,258, Bureau of Manufactures, Washington, D. C.

TRADE IN SMALL CARS—A foreign business house is open to negotiations for the agency of an American car possessing the following qualifications: About 15 to 20 horsepower, high-tension magneto, thermo-syphon cooling, three speeds and reverse. The firm desires a good, low-priced car of the class that is listed in the United States at \$750 to \$950, complete with hood, screen, lamps, tools and usual accessories. The firm would also handle an agency for a 25 to 30-horsepower car listed in the United States at \$1,000 to \$1,200. Quotations are desired in both chassis and chassis and car complete with body and trimmings, as on account of the customs duties chassis only may have to be imported. File No. 8,185, Bureau of Manufactures, Washington, D. C.

AUTOMOBILE ACCESSORIES—A resident of a Mediterranean country desires the exclusive agency of some important American firm manufacturing automobile accessories. First-class references, and, if necessary, money on deposit. Correspondence may be in English. File No. 8,191, Bureau of Manufactures, Washington, D. C.

HEAVY MOTOR TRUCKS—The manager of a Canadian garage in his district desires to be put in touch with American manufacturers of heavy motor trucks with a view to obtaining an agency. File No. 8,196, Bureau of Manufactures, Washington, D. C.

LEATHER FOR AUTOMOBILE TOPS—A business man in Italy desires to secure the representation in that country of American manufacturers of leather especially adapted for automobile tops. He states that he is in a position to sell large quantities of such leather, and desires to have prices, discounts and terms. Correspondence in French, Italian or English. References can be furnished. File No. 8,159, Bureau of Manufactures, Washington, D. C.

ASIATIC TRADE IN AUTOMOBILES—An American consul in an Asiatic country states that a firm in his district desires to receive catalogues with lowest cash prices and export discounts with shipping weights covering automobiles. The country in which these automobiles will be used is very mountainous and the roads very poor. Correspondence may be in English. File No. 8,318, Bureau of Manufactures, Washington, D. C.

AUTOMOBILE SELF-STARTER—A firm of European Automobile manufacturers would like to be put in direct touch with American manufacturers of automobile self-starting devices. File No. 8399, Bureau of Manufactures, Washington, D. C.

AUTOMOBILES—Reports from an American consul say that there are abundant trade opportunities for South Africa in petrol air gas plants, acetylene gas plants, suitable motor cars, 5 to 15 horsepower, c. i. f. prices and illustrations with full details. For further particulars address the Bureau of Manufactures, Washington, D. C. File No. 8412.

CHILEANS TO USE OIL FIELDS—A company has been organized to develop the oil fields located near Punta Arenas in Southern Chile. The company has a capital of \$330,000 and has already ordered American boring machinery for the fields situated south of Concepcion.

MOTORS FOR AGRICULTURAL PURPOSES—An American consul has forwarded circulars and applications indicating the conditions under which it will be possible to take part in official tests, which will be held from May 26 to June 15 in the country in which he is located, of motors for agricultural purposes. The official under whose supervision the trials will be held has expressed a desire for American manufacturers to take part in these tests. For copy of the complete report, circulars, and applications write the Bureau of Manufactures, Washington, D. C. File No. 8419.

ELECTRIC MOTOR VEHICLES—A strong company has been formed in a foreign country with the object of introducing electric motor vehicles, for pleasure and commercial purposes, into the country in question. One of the directors of this company is prepared to order 14 trucks for his own business, and it is expected that the trade in these machines will be radically enlarged. Write the Bureau of Manufactures, Washington, D. C. File No. 8425.

AUTOMOBILES AND MOTORS—A business man in an European country informs an American consulate that he desires to be put in communication with American manufacturers of automobiles, motors, electrical appliances and motors for heavy oil and gasoline. Address all communications to the Bureau of Manufactures, Washington, D. C. File No. 8439.

Automobile Metallurgy Made Easy

By E. F. LAKE

NATURAL alloy steel is another one of the new steels, having been in use less than 5 years. It owes its name to the discovery of an ore that is low in phosphorus and contains nickel and chromium in considerable quantities; these being combined with the ore by nature. While such an alloy has been known to exist for some time, ores with a uniform composition, and in quantities sufficient to warrant the manufacture of such steels, were not known until the ore beds in the eastern end of Cuba were discovered and found to have over 1,000,000,000 tons of ore in sight. Before this the nickel and chromium used in steels were each reduced to a pure state from their ores. This reduction has been an expensive operation, thus making the nickel and nickel-chromium steels high in price.

Steels made from this natural alloy ore contain from 1.00 to 1.50 per cent. of nickel and from 0.30 to 0.75 per cent. of chromium, while the phosphorus and sulphur are low. The manganese ranges between 0.50 and 0.80 per cent. and the silicon is kept below 0.20 per cent. The Philadelphia Steel Company, Steelton, Pa., controls these ores and manufactures them into steels whose carbon content can be made anything that is suitable for the work that the steel is called upon to perform. They have given it the trade name of Mayari steel from the name of the town near where the mines are located. Other companies that are manufacturing this steel into the finished product, such as forgings, pressed or stamped parts, etc., call it Natural Alloy steel, Samson steel, and other names. It is made in two types; one of which contains from 0.20 to 0.40 per cent. of chromium, and the other from 0.40 to 0.70 per cent. of chromium; both being produced in any carbon percentage desired.

Since the nickel and chromium do not have to be reduced to a pure state but can be used in the condition in which they are combined by nature, the finished steel costs but little more in the billet form than carbon steels, and thus can be used in many places where the price of alloy steels have made them prohibitive. As long as it is as well made as it is at present, it is in all respects the equal of 3 1-2 per cent. nickel steel in the heat-treated condition. In some regards, it is superior; especially is this true of the type with the higher chromium percentage, or of parts with a large sectional area.

In manufacturing this steel, the natural alloy is melted down

in the furnace by practically the same methods that are used for the manufacture of other steels. When the bath is purified, the desired amounts of carbon, manganese, silicon, or other elements are added and the steel is

thus made in any composition that is desired. The standard brands have a carbon content that ranges all the way from 0.15 to 0.50 per cent. of carbon, in steps of 0.05 per cent. A high carbon brand is also made that is suitable for leaf springs and this contains between 0.90 and 1.05 per cent. of carbon.

The nickel and chromium being in a natural combination in the ore, they are present from the time it is first melted down until the steel is finished and therefore, they more readily form an intimate mixture with the other ingredients, in the manufactured steel. Thus, the undesirable feature of segregation, which shows in laminations when the steel is rolled, is not so liable to be found. This is difficult to overcome in the ordinary alloy steels, and more especially in the nickel steels. This segregation is largely due to the fact that alloy steels must be heated to a comparatively high temperature before they are tapped from the furnace. The natural alloy steels, however, do not require this extra high temperature at tapping and the various constituents are not as liable to separate from one another but are more uniformly distributed throughout the metal.

The chromium refines the grain of the steel to a remarkable extent and has a tendency to produce a mineral hardness, as it prevents coarse crystals from forming when the metal cools down from the liquid state, or when it is being heated and quenched during the heat-treatment it may receive. While it gives no self-hardening properties to steel, it intensifies the sensitiveness of the metal to quenching from a high heat in water or oil, when it is being hardened. Carbon steels are liable to fracture when thus suddenly quenched but chromium overcomes this tendency to a very great extent, as it causes a slower movement of the critical changes that take place in all steels when they are being heated up. By having these effects upon steel, chromium increases the tensile strength, elastic limit, hardness, resistance to shocks, vibrations, or other strains, or stresses, as well as its wearing qualities.

The nickel raises the elastic ratio; that is to say, the elastic limit is a higher percentage of the tensile strength; a thing that is sought for in all high grade steels. Nickel, also, increases the ductility and toughness of steel and greatly improves its resistance to shocks, abrasive wear, compression, corrosion and also adds to the resiliency. It also increases its susceptibility to heat-treatment. By adding these two elements to steel, therefore, a sound, tough, strong metal can be produced if they are properly combined with the other elements and the steel well made.

The chromium in these steels seldom runs over 0.75 per cent. and hence they should not be compared to the higher grades of nickel-chromium steel, which have a chromium content of approximately 1.00 and 1.50 per cent. These latter give the greatest strengths, resistance to strains, and wearing qualities that are obtainable in steels and are the acme of the steel-maker's art. Natural alloy steel comes second to them when it is properly made. Titanium or vanadium can be added to still further purify and strengthen the metal.

Natural alloy steels, like the alloy steels described in former articles, give the best results after being heat-treated. In the normal, or annealed state, like these, they have but little better

FIG. 1—STRENGTHS OBTAINED BY HEAT-TREATING NATURAL ALLOY STEEL

Carbon Content		0.30%	0.40%	0.50%	
Annealed.....	Tensile strength.....	89,500	88,500	119,500	Lbs. per Sq. In.
	Elastic limit.....	57,500	56,000	68,000	
	Elongation.....	28.0	29.0	18.0	Per centage
	Contraction.....	51.9	51.9	37.1	
600° F. and Quenched in Water, Then Tempered at	Tensile strength.....	193,000	209,000	252,000	Lbs. per Sq. In.
	Elastic limit.....	177,000	188,000	232,000	
	Elongation.....	8.5	10.5	7.0	Per centage
	Contraction.....	30.7	37.1	24.0	
1,000° F.	Tensile strength.....	131,000	130,500	155,000	Lbs. per Sq. In.
	Elastic limit.....	114,000	118,500	138,500	
	Elongation.....	17.5	18.5	14.0	Per centage
	Contraction.....	51.9	51.9	43.0	
1,050° F.	Tensile strength.....	106,500	112,500	135,000	Lbs. per Sq. In.
	Elastic limit.....	76,000	83,000	107,000	
	Elongation.....	21.0	23.0	16.5	Per centage
	Contraction.....	51.9	59.8	46.2	

FIG. 2—RESULTS OBTAINED FROM TORSIONAL TESTS

Kind of Steel	ANNEALED		HEAT-TREATED	
	INCH POUNDS OF FIBER STRESS			
	Elastic Limit	Ultimate	Elastic Limit	Ultimate
Natural Alloy.....	41,500	93,400	93,600	130,200
3½% Nickel.....	40,800	78,200	76,400	108,000
Carbon.....	32,500	75,100	60,500	102,400

physical properties than the ordinary carbon steels. A proper heat-treatment, however, will double and triple the strengths obtained from un-treated steel. It can be heat-treated as easily as the carbon steel and in this it differs from the alloy steels; especially nickel-chrome steel. The heat-treatment of this latter must be very carefully done, if the best results are to be obtained, while the natural alloy steel can be quenched in water, from a hardening heat, without much danger of its cracking or checking. These steels are especially suitable for carbonizing or case-hardening, as the chromium greatly aids in the penetration of the carbon. The increase in the percentage of carbon that soaks into the steel in a given time, and its depth, average about 1-3 more than is the case when ordinary carbon steels are used.

This steel is also forged, hammered, pressed or bent into useful shapes more easily than any of the other alloy steels, unless it be those that have been treated with titanium or vanadium. Its tensile strength, elastic limit, etc., are shown in Fig. 1 under various kinds of heat-treatment; while the average fiber stress of torsional tests that were given carbon, nickel and natural alloy steels by the Philadelphia State College are shown in Fig. 2. This latter shows the strengths of the three kinds of steel.

For automobile parts, except leaf springs, these steels are used in the eight commercial grades, in which the carbon content varies from 0.15 to 0.50 per cent. The grade containing 0.15 per cent. of carbon is primarily used for parts that are to be carbonized, to thus give them a hard outer wearing surface and a soft, tough core. The grade containing 0.20 per cent. of carbon is also used for carbonized parts, but for such parts as require a considerably tougher core than can be obtained with the former. This makes it especially suitable for change-speed gears, or other parts that are submitted to shock. It is also used for frame members, brake drums, or other structural parts which require great toughness, rather than strength. The 0.25 per cent. carbon grade is usually used for cold pressing such parts as frames, etc. It more readily lends itself to heat-treatment than the two former grades and hence it is often used for connecting-rods and similar parts that are to be heat-treated. The 0.30 per cent. carbon grade is used for driveshafts, axles, connecting-rods and other parts that require considerable strength and at the same time a high degree of toughness. The 0.35 and 0.40 per cent. carbon grades are used primarily for spindles, rear axles, crankshafts, etc. Grades with 0.45 and 0.50 per cent. of carbon are used where extreme strength is needed and at the same time considerable ductility. Thus, it is often used for transmission gears that are heat-treated and not carbonized.

The natural alloy steels are rapidly gaining the favor of automobile manufacturers and will doubtless be used to a greater extent in the future than they are at the present time, owing to the fact that a natural alloy steel with a low percentage of chromium can be obtained in this way at a cheaper price than the nickel steels, while better results may be obtained as to wearing properties, strengths, resistance to vibrational and impact strains, etc. It is also more easily worked into the shapes required and more rapidly responds to heat-treatment.

Calendar of Coming Events

Shows

April 6-13..... Ottawa, Que., Annual Show, Howitch Hall, Ottawa Valley Motor Car Association.
 April 8-13..... Oswego, N. Y., Annual Show, Company D, Armory.
 April 29-May 4..... Burlington, Vt., Annual Show, State Armory, Burlington Merchants Protective Association.
 May 6-11..... Philadelphia, Show and Carnival, Belmont Race Track, Narberth, Pa., Belmont Motor Club.
 June 17-22..... Milwaukee, Wis., Convention and First Annual Show, National Gas Engine Association.
 June 27-29..... Detroit, Mich., Summer Meeting of the Society of Automobile Engineers.
 July 10-20..... Winnipeg, Man., Canadian Industrial Exhibition.
 Sept. 23-Oct. 3..... New York City, Rubber Show, Grand Central Palace.

Race Meets, Runs, Hill Climbs, Etc.
 April 13..... New York City, Truck Parade, Motor Truck Club.
 April 20..... Atlanta, Ga., Hill-Climb, Atlanta Automobile and Accessory Association.
 April 27..... Los Angeles, Cal., Speedway meet, Motordrome.
 April 27..... Philadelphia, Pa., Annual Roadability Run, Quaker City Motor Club.
 July 3-5..... Belle Fourche, S. Dak., Second Annual Track Meet.
 May 4..... Santa Monica, Cal., Annual Road Race, Motor Car Dealers' Association.
 May 14-17..... Chicago, Ill., Commercial Vehicle Test, Chicago Motor Club.
 May 17-18..... Denver, Col., Track Meet, Colorado State Automobile Association.
 May 30..... Indianapolis, Ind., Speedway, 500-mile race.
 May 30..... Salem, N. H., Track Races, Rockingham Park.
 June 20..... Algonquin, Ill., Annual Hill-Climb, Chicago Motor Club.
 July 4..... Petersburg, Ind., Track Meet.
 July 4-5..... Taylor, Tex., Track Meet, Taylor Automobile Club.
 July 4-6..... Old Orchard, Me., Beach Meet, Old Orchard Automobile Association.
 July 15..... Milwaukee, Wis., Reliability Run, Wisconsin State Automobile Association.
 Aug. 8-10..... Galveston, Tex., Beach Meet.
 Aug. 23-24..... Elgin, Ill., National Stock Car Races, Chicago Motor Club.
 Sept. 2..... Indianapolis, Ind., Track Races, Speedway.
 Oct. 5..... Philadelphia, Pa., Annual Fairmount Park Road Race, Quaker City Motor Club.
 Oct. 7-11..... Chicago, Ill., Reliability Run, Chicago Motor Club.
 October 12..... Salem, N. H., Track Meet, Rockingham Park.
 Nov. 6..... Shreveport, La., Track Meet, Shreveport Automobile Club.

Foreign

May 26..... Barcelona, Spain, Cup of Spain Road Race, Automobile Club of Catalonia.
 June 25-26..... Dieppe, France, Grand Prix de France, Automobile Club de France.

Getting Gasoline for Coupons

A system by which automobileists and their chauffeurs can obtain gasoline at a uniform price and always of the same quality without paying cash for it has been instituted in Germany by the German-American Petroleum Company. Books with order coupons are issued by the company and contain the names and addresses of all the sales stations which have been established, and the number of these, scattered throughout the empire, has now reached 700. The system is meeting with increasing favor among automobile owners, as it saves inquiry and search when the traveler is away from his home locality, obviating overcharging and acts as a check in the case of all purchases made by employees. It also makes it easier to keep tab on mileage and fuel consumption. So far 8,000 coupon books have been issued, according to the statement of the company.—From *Automobilwelt*, March 8.

German Exports for 1911

Germany during 1911 exported 5,481 motor cars and chassis, whose value was \$11,587,500. During 1910 the exports comprised 3,624 motor cars and chassis, of \$7,939,000 value. Russia was the largest purchaser followed, in order, by Great Britain, Austria, Brazil, the United States, Argentina, Holland, France and Denmark, in the matter of pleasure cars. The order in which countries bought industrial motor cars was as follows: Russia, Austria, Brazil, Italy, Great Britain, Turkey and Holland. Germany's imports reached a total of 1,378, valued at \$2,771,000 in 1911, as compared with 1,296 cars worth \$2,580,750 during the previous year. French-made pleasure cars led, then came Belgium, Austria and Great Britain. Sixty-seven per cent. of the industrial vehicles sent into Germany were manufactured in Switzerland.



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New Jersey in Line

After 5 years of trying to keep the automobilists of other states out of their own, the people of New Jersey last week, by passing the Stickel bill, have thrown down the barriers, and when once the governor signs the bill it will be possible for motorists of adjoining states to pass through Jersey without being compelled to take out a special non-resident license. The new bill gives every non-resident 15 days' privilege in the state without a Jersey license, providing he carries the license of his own state. After 15 days the non-resident who wants to use the Jersey roads must take out a regular Jersey license.

The automobilists of New Jersey deserve the highest congratulations on their achievement of last week. For half a decade they have been fighting the anti-motorists' party which built the Chinese wall about the state.

Five years ago, when Jersey decided to tax every automobile that crossed its border into the state, a rule of retrogression was instituted. New Jersey did not think it was getting a square bargain with such states as Pennsylvania and New York. The argument was advanced that when the citizen of Pennsylvania went through New Jersey he had perfect roads to take him from his home state to the City of New York or the New England states, whereas when the Jerseyman went into Pennsylvania he was confronted with toll gates and poor roads as well. As a result Jersey built its Chinese wall; it wanted to be a

state unto itself, felt that it could live without adjoining states and imagined it would get a full treasury from the licenses of the thousands of automobilists of other states who had to pass through Jersey to get to New York and also from the New York people who desired to cross the state or reach any of its resorts.

Time changes all things, and Jersey saw a change 2 years ago, when other states began erecting barriers. New York introduced reciprocal non-resident arrangements; that is, if another state admitted New York automobilists for a certain number of days without non-resident licenses then she would do likewise. When Jersey refused to grant or even acknowledge reciprocal arrangements her automobilists, the moment they entered New York, or other reciprocal states, discovered they had to take out licenses. At once it was seen that there are two sides to every argument. When building a Chinese wall around themselves they were erecting an equal barrier against themselves only, around other states.

Contrast the position of Jersey with some of the New England states that began building roads to the scenic centers in order to get the motorists to travel through their states. They wanted them for the money they left in the state, realizing at the same time that roads would be worn out. It is better state policy to use the open door, which is the modern business policy of today.

* * *

Auctioning Road Races

Is there going to be a Vanderbilt cup race this year? Is there going to be a Grand Prize road race? If so where will they be held? To the sporting automobilist these are pertinent questions, particularly when Milwaukee, Los Angeles and Dallas, Texas, are bidding for them. Every place seems to be bidding but Long Island. The Vanderbilt Cup race should, if run at all, be decided on Long Island. When run in other places it is taken out of its proper environment.

In spite of the Long Island prohibition it is pathetic to see the American road racing classic exploiting the sporting columns of half of the daily papers of the country. The trophy occupies too high a place in the minds of the motor fraternity to receive such treatment. It would be better to withdraw it from the field of competition than to farm it out to the four quarters of the country. The trophy as a trophy would be of more value in Texas, Southern California or Wisconsin than any local trophy not known to the world, but its value would be immeasurably enhanced when contested for in the locality of its birth, Long Island. The development of local stimulus is what is needed in contests, and the farming out of trophies should be discouraged. Each big trophy can have its place. The public associates the Vanderbilt cup with New York; Fairmount Park with Philadelphia, Elgin National with Chicago, Grand Prize with Savannah, Santa Monica with California, etc. Each is best in its place and when taken into another locality loses much of its prestige. The local trophies which are now taking places of national importance have done much to stir up the local spirit, and where new centers are striving for position on the racing map they will be wise to get their own trophies and leave the others to their own localities.

United States May Have to Pay for Use of State Roads

Shackleford's House Bill Provides for Per Mile Per Annum Compensation for F. R. D. Service

WASHINGTON, D. C., March 30—The introduction of a bill in Congress by Representative Shackleford reveals the fact that twenty-eight members of Congress, each of whom is the author of a good roads bill, have agreed to support the measure framed by Representative Shackleford. This bill is said to contain the good points of the various bills. The twenty-eight members, constituting a formidable good roads fighting body, held a conference and decided so long as the house had before it a great number of bills on this subject, the likelihood of legislation was remote. The Shackleford bill provides as follows:

That for the purposes of this act certain highways of the several states, the civil subdivisions thereof, and companies incorporated under the laws of the several states are classified as follows:

Class A shall embrace well-graded roads outside of incorporated cities, towns and villages of not less than one mile in length, upon which the steepest incline shall not exceed five per centum wherever practicable, not less than 25 feet wide between the ditches, well drained, with a wagon way or road track not less than 12 feet wide, composed of bituminous macadam, brick, or of macadam, not less than six inches thick, rolled, bonded and maintained with a smooth, firm surface, both shoulders and roadway properly constructed and continuously cared for.

Class B shall embrace well-graded roads outside of incorporated cities, towns and villages of not less than one mile in length, upon which the steepest incline shall not exceed five per centum wherever practicable, 25 feet wide between the side ditches, well drained, with a wagon way or road track 12 feet wide, composed of burnt clay, shells, sand, clay or gravel, not less than eight inches thick, continuously kept well compacted, and with a firm, smooth surface, with roadway well and properly crowned, so as to quickly shed water into the side ditches.

Class C shall embrace roads outside of incorporated cities, towns and villages of not less than one mile in length, upon which the steepest incline shall not exceed five per centum wherever practicable, which shall be kept well graded, crowned and drained to a width of not less than 18 feet, with split-log drag or other similar means, so as to be reasonably passable for wheeled vehicles at all times.

Sec. 2. That whenever the United States shall continuously use any highway of any state, or civil subdivision thereof, or of any company incorporated under the laws of any state, which fall within classes A, B or C, for the purpose of transporting free rural-delivery mail, compensation for such use shall be made at the rate of \$30 per annum per mile for highways of class A, \$20 per annum per mile for highways of class B, and \$10 per annum per mile for highways of class C. The United States shall not pay any other compensation or toll for such use of such highways than that provided for in this section, and shall pay no compensation whatever for the use of any highway not falling within classes A, B or C.

Sec. 3. That the Director of Roads in the Department of Agriculture shall determine the class, if any, into which any road shall fall, and his determination upon that subject shall be final.

Sec. 4. That the compensation herein provided for shall be paid at the end of each fiscal year by the Treasurer of the United States upon warrants drawn upon him by the Postmaster General to the officers or persons entitled to the custody of the funds of the respective highways entitled to compensation under this Act.

Sec. 5. That this Act shall go into effect on the first day of July, nineteen hundred and thirteen.

Maine Moves for Good Roads

AUGUSTA, ME., April 1—In the house of representatives last week, the lower branch went on record in favor of good roads by passing the resolution for the building of permanent state highways after amending the measure so as to limit the bond issue for this purpose to \$2,000,000, but to permit the issuing of further bonds from time to time as the earlier issues are discharged. The measure now goes to the Senate, where it will undoubtedly be passed and Governor Plaisted will sign it.

Prizes Offered for Rubber Paving

A. Staines Manders, organization manager of the forthcoming international rubber exposition, which will be held at the Grand Central Palace from September 23 to October 3, has announced that three prizes aggregating \$7,500 will be offered to inventors who can suggest the best methods of rendering rubber available as a non-slipping road material.

Committee to Give Hearing on Federal Building of Roads

Will Listen to Arguments on Underwood Bill—Five of Eleven Members Said to Be Favorable

WASHINGTON, D. C., April 1—Next Wednesday has been set by Chairman Henry of the Rules Committee of the House of Representatives, for the hearing on the Underwood resolution, providing for the naming of a joint committee of Congress to consider Federal participation in roads building. The committee thus brought into existence would be "authorized and directed to report to the Congress all information obtained from such investigation, together with recommendations as to the advisability of the Congress granting national aid to the maintenance and building of post roads and national highways in the United States, and to make recommendations as to the proper legislation to be enacted by the Congress."

Of the eleven members of the House Committee, several are avowedly in favor of Federal participation in roads building. Messrs. Campbell, of Kansas, Lenroot, of Wisconsin, Pou of North Carolina, Stanley, of Kentucky and Denver, of Ohio can all be counted upon to favor any reasonable measure along the lines indicated. Foster, Wilson and Dalzell are apparently not in favor of road building by the Federal government.

Boosting Quebec-to-Miami Road

RICHMOND, VA., April 1—A delegation of Richmond business men went to Washington today to confer with representatives of the Washington Chamber of Commerce concerning the permanent organization of the Richmond-Washington division of the Quebec-to-Miami International Highway Association.

A meeting will be held in Richmond April 3 for the purpose of forming a corporation for the building of the Richmond end of the Richmond-Washington highway project. A committee has recommended organizing with a capital stock of \$10,000 with shares at \$10 each and provisions for increasing the capital.

The workers at the Washington end may adopt the same plan of procedure.

A tour is soon to be made over the entire length of the highway, a distance of about 3,000 miles.

The party will consist of eight people in three cars and be under the direction of Fred C. Miller representing the Board of Trade and the Automobile and Good Roads Association of Miami, and will be conducted under the auspices of the Touring Club of America, and the Quebec-Miami International Highway Association.

Road to Louisiana Summer Resorts

NEW ORLEANS, LA., April 1—An effort is being made to complete the last stretch of road necessary to connect New Orleans with the improved highway running west from Atlanta, Ga., to Pearlington, Miss. A fine shell road runs eastward from New Orleans to Chef Menteur, a distance of 30 miles. The 60 miles between this point and Pearlington lays through low country and the difficulties of construction are such that previous attempts to secure a roadway have been discouraged. A fund of \$1,500 for the preliminary survey has been raised. As several bridges will have to be built the expense of the construction will be heavy. This road will be of the greatest importance to motorists in New Orleans as it will provide a direct route to the coast summer resorts at Biloxi, Gulfport, Pass Christian and Mississippi City.

Hoosier Tent Show a Success

Rain Failed to Dampen the Enthusiasm of the Indianapolitans, Who Attended in Great Numbers

INDIANAPOLIS, IND., April 1—Despite the bad weather, the Indianapolis Automobile Trade Association's tent show, which closed last Saturday night, was quite successful.

The show opened on the afternoon of March 23, and that night there was considerable rain which kept down the attendance. On Sunday, several tons of snow fell on the tent, and John Orman, show manager, kept 300 men busy all night, getting the snow from the top of the canvas. About thirty-five salamanders were used in the tent to melt the snow, and incidentally to provide warmth for the visitors.

Several hundred cars were sold during the show. About 200 models were exhibited, besides an extensive line of accessories.

Many exhibits were limited because of lack of space. Although there was approximately 48,000 square feet of space available, this did not nearly meet the demands. The tent contained in all 65,000 square feet, occupying New York, Vermont and Meridian streets, around three sides of University Park.

The tent show has started a definite movement for a coliseum for the city. The net profits are to be placed in trust by the Association and turned over to a fund toward the erection of a coliseum.

As a result of the tent show, there is some talk of a traveling tent show to advertise Indiana-made cars. Several manufacturers of the state are seriously considering running a special train to a number of cities, carrying motor cars which would be exhibited in each city for a day or two in a tent.

Gotham's Streets in Poor Condition

Mayor William J. Gaynor's committee on pavements, appointed last October, has submitted its report, which is couched in scathing terms as applied to street conditions in New York. The gist of its conclusions are carried in the following excerpt: "If the condition of a city's pavements is a fair gauge of its civilization, as has been maintained by high authorities, New York must rank low in the scale."

The committee reported that the city is far behind British cities in street maintenance. The report cites twenty objections to present methods, some of which are as follows: Defective and antiquated specifications and obsolete methods, slovenly workmanship, divided responsibility, departmental interference, insufficient supervision, delay, poor inspection, long guarantees, ignorance of traffic statistics, manholes built above street levels, flushing methods, etc.

Philadelphia's New Club Active

PHILADELPHIA, March 30—That the newly organized Belmont Motor Club plans an active campaign in the racing field during the coming summer season is demonstrated by the ambitious plans formulated at a meeting of the organization held this week at its headquarters, Belmont Driving Park, Narberth. First in date and importance will be a one-week open-air automobile show and carnival to be given from May 6 to 11, inclusive, at Narberth. Exhibition contests will be held each afternoon on the mile and half-mile tracks and plans for special competitions are now under consideration.

Formal application to the Contest Board of the American Automobile Association has also been made for a sanction for a race meet to be held on Saturday, June 15.

New York State Exhibitions

Watertown and Geneva Hold Annual Shows, Two in Latter Place—Oswego Next Week

SYRACUSE, N. Y., March 30—The second automobile show of the Watertown Automobile Dealers' Association, held in northern New York's principal city the final 4 days of this week, was successful in point of sales, which exceeded all expectations. The makes of vehicles shown included the Babcock, Buick, American, Columbia, Maxwell, Cadillac, Krit Kar, Reo, Overland, Oakland, Mitchell, Matheson, Oldsmobile, Hudson, Empire, Hupmobile, Jackson, Flanders, Marathon, Stoddard-Dayton and R. C. H. The exhibition was held in the Armory. Trucks were shown by the Ford concern and the Babcock Manufacturing Company, a Watertown concern that was formerly a pioneer in the carriage business, but which is now making pleasure cars and trucks. Sales of pleasure cars were large and there was also a demand for automobile delivery wagons.

The Oswego show, which opens April 10 and closes on April 13, is under the direction of W. R. Marshall, manager of the Syracuse show, which will be held under the joint auspices of the Automobile Club of Oswego and the Chamber of Commerce.

The current week saw lively times in the little city of Geneva, in the southern tier. There were two rival auto shows in full swing. One was held at the Armory, where twenty-five cars were shown, mostly by out-of-town dealers.

Stop Joy Rides at Public Expense

WASHINGTON, D. C., March 30—Joy riding at government expense must stop. This is the edict which different members of Congress have issued. To make their decision more impressive a resolution has been introduced in the Senate calling for information as to the extent to which automobiles are furnished government officers and employees at the public expense.

It is understood that the inquiry will not extend to the use of automobiles by the President, Vice-President and Speaker of the House, at government expense, but beyond that it will be delved into thoroughly. Members of the two houses of Congress express themselves vigorously on this subject, and say that there is no reason why a practice of providing automobiles and drivers for federal officers should be in vogue.

Instances have come to light, it is said, in which machines thus employed were used for purely private purposes and not in any way to the benefit of the government service.

Fighting Wheel Tax at the Capital

WASHINGTON, D. C., March 30—Determined efforts on the part of the city authorities to collect the so-called wheel tax has resulted in an attempt to raise funds to fight the matter in the courts. The matter has been before the courts on several occasions and each time the motorists have lost the fight. It is claimed that new grounds have been discovered for an appeal, and Leroy Mark, vice-president of the southeastern division of the Touring Club of America, is now appealing to the motorists of Washington to contribute to a fund to take the case up to the highest courts. The case, it is believed, will eventually reach the supreme court of the United States.

More than a hundred warrants were sworn out this week against motorists for failure to pay the tax. They were served in some instances and the delinquent motorists were bound over for trial on April 4. The test case will be made from one of the motorists at that time.

Motor Truck Parade April 13

Enormous Entry List Assured, Many Private and Dealers' Vehicles Having Been Already Entered

INDICATIONS point to a fine turn-out when the Motor Truck Club's annual parade is given April 13. Plans are progressing satisfactorily and a big entry list is practically assured.

Dealers will take part in the parade in representative numbers, but this year the club is making a special effort to gain entries from individuals and corporations using trucks.

A fee of \$2 will be charged for each entry, for which the club will give a pair of flags and a pair of panel banners carrying the name of the car. Dealers' entries will be restricted to this form of advertising, but the private owner may follow his own ideas.

There will be several trucks in the column carrying bands, the bodies being specially built up for such purpose.

The hour for starting has been set for 2 o'clock on Saturday afternoon so that as little inconvenience as possible shall be borne by the owners through loss of time in using their trucks for business.

The load limits will be governed solely by police regulations and the committee intends to have the owners make interesting displays of their wares.

Another meeting will be held April 6 to complete general arrangements. Charles E. Stone, secretary of the club, has offices at 427 West Forty-second street.

Quakers After Motor Fire Wagons

PHILADELPHIA, March 29—Philadelphia's Fire Department is to be motorized. Several laps behind other cities in this respect, local horse-drawn equipment is slowly but surely to be superseded by motor-driven apparatus, plans and specifications for which are now being drawn up. As soon as a satisfactory agreement as to the type to be adopted has been reached the start will be made and bids invited.

It was the original intention to use the money available for new fire equipment in the purchase of the horse-drawn type, but a protest was lodged with Director of Public Safety Porter by the committee on municipal affairs of the board of trade, after the members had made an investigation of the fire-fighting methods in vogue in several other cities, and profiting by the information thus gleaned, the original bids were withdrawn. The purchasing of motor trucks and the elimination of horses will be gradual but thorough. At present about \$40,000 is available for the purpose, and it is expected that by the time next year's appropriation becomes available the tendency toward motor equipment will have been so far developed that the entire amount will be asked for.

May Abandon Trains for Trucks

PHILADELPHIA, March 30—Members of the Interstate Milk Association, a meeting of which took place this week in the Parkway Building, southeast corner of Broad and Cherry streets, are seriously considering the advisability of installing motor trucks as a cheaper means of transportation of milk cans from the rural districts to Philadelphia. Two trucks operating between Woodstown and Camden have so far amply demonstrated that not only can the payment of high rates on the railroads be avoided, but that a considerable saving in time to this city could be made, thereby eliminating the expense incident to refrigeration during transportation. Walter Pancoast, Woodstown, Pa., president of the association, advocated the change.

Der Herr Kommerzienrat Sachs

Head of the Largest Ball-Bearing Plant in All Europe Studies American Manufacturing Methods



Herr Kommerzienrat Sachs

WHEN a German manufacturer so perfects his product that it gains a world-wide reputation for excellence he is invested with the title of Herr Kommerzienrat. It is an honor with which many of the hereditary titles borne in the Empire cannot compare, for its acquisition is possible only to the skilful and the learned. That title is one of the proudest possessions of Ernst Sachs, head of the largest ball-bearing plant in Europe. The Fichtel & Sachs establishment, which is located at Schweinfurt, Bavaria, turns out 15,000 complete bearings and about 4,000,000 balls of various sizes each day.

Herr Sachs has just completed a flying visit to this country. Under the wing of his American representative, Jacob S. Bretz, he inspected some of our largest automobile manufacturing plants. The perfection attained by American makers in quantity production astounded him. He admitted that until he had actually seen 315 cars turned out in a single day under his very eyes he had been a trifle skeptical. He said that what he saw at the Ford, Packard, Overland, Lozier, Stearns and other plants was only possible through following a perfect-working system. It was to study these systems that he had come to America.

Under the guidance of George W. Bennett, general sales manager of the Willys-Overland Company, he thoroughly inspected the huge Toledo plant. Visitors to the works are furnished with a long perforated tag resembling a railroad ticket, one section being given up at the entrance to each department. As an experiment he tried to pass into one shop without handing his ticket to the doorkeeper, but was held up, much to his amusement. When informed that Mr. Willys himself had been similarly treated while endeavoring to pass the watchman without the proper credentials the visitor was convinced that established systems are adhered to at the Overland plant.

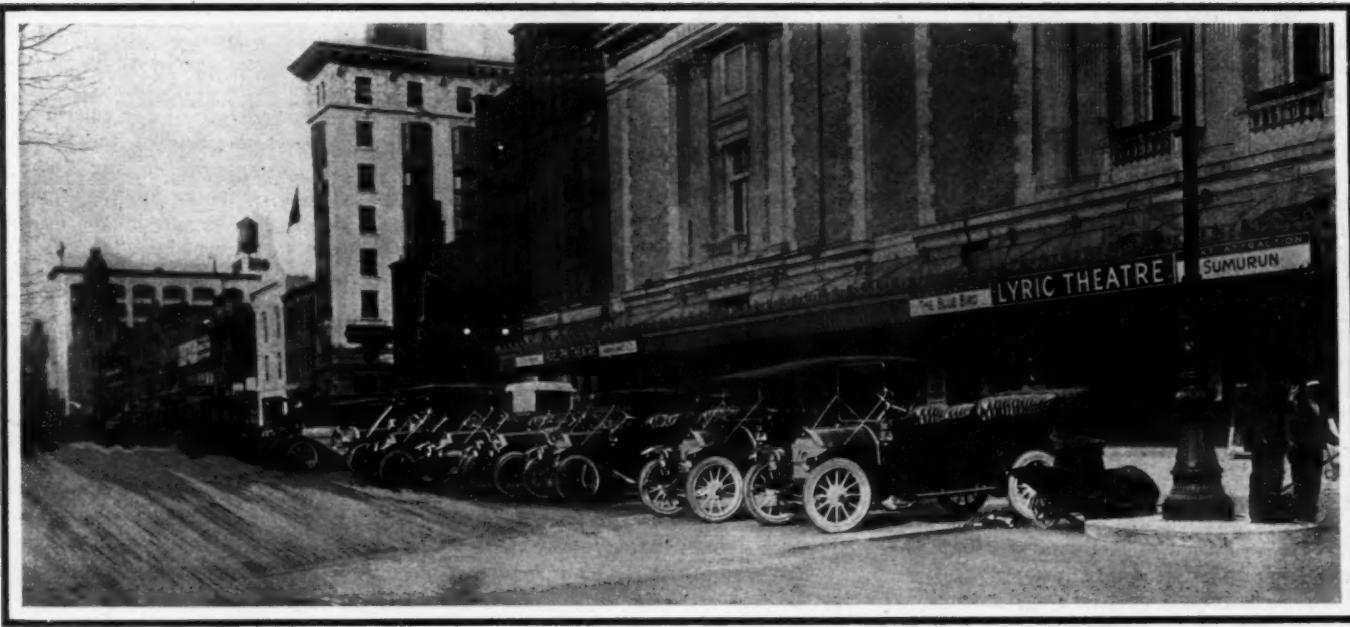
He was lavish in his praises of New York and other American cities. He said that the metropolis was rapidly approaching the foreign capitals in the matter of architecture, all new buildings being erected with the idea of permanency. He was forced to admit, however, that in the matter of skyscrapers, Europe has nothing that can compare with any first-class American city.

One evening while walking down Broadway he remarked to Alex. Schwalbach, the official interpreter—for the Herr Kommerzienrat has never found time to master the English language—that he had not seen a single horse-drawn vehicle between the Hotel Astor and Thirty-third street. He was told that New York nowadays went to the theater in automobiles, of which there were more in New York than in all Germany.

Among those who entertained Herr Sachs during his stay in New York was Otto Heins, manager of the Bosch company.

Herr Sachs is a typical red-cheeked, deep-chested German, and in his youth was the champion bicycle racer of his native country. He is a member of the Kaiserliche Automobil Klub, and in one of the Prince Henry tours finished but one-fifth of a point behind the winner, capturing the City of Vienna cup.

News of the Week Condensed



The new traffic law in Philadelphia compels waiting automobiles to be parked in the middle of the street

PHILADELPHIA'S NEW PARKING PLAN—Instead of permitting the owners and drivers of automobiles to back them up to the sidewalk on Broad street or line them up at the curb, the Philadelphia police now compel every driver of a machine that is waiting for a passenger to drive to the center of the street and wait there. This leaves the street clear for traffic on both sides of the parked automobiles.

To Sell Motz Tires—The Standard Tire & Rubber Company, Boston, Mass., has secured the New England agency for Motz tires.

Howe Is Sales Manager—E. N. Howe has accepted the position of sales manager with the Michigan Motors Company, Portland, Ore.

Starts Livery Business—The Mack Garage, Lima, O., has opened an automobile livery business in connection with the garage and sales business.

Organize Auto Club—The Neenah Automobile Club has been organized in Neenah, Mich. The club plans extensive summer tours through the state.

New Garage for Indiana—H. Wallace Thomas and his brother have sold the well-known Thomas Livery barns, Indiana, Ill., to the Indiana Motor Company for use as a garage.

Toole Has Western Territory—J. F. Toole has recently taken charge of the F. B. Stearns Company in San Francisco, Cal., and will manage the Western territory.

Car for Fire Chief—St. Louis, Mo., recently purchased an American Traveler for the use of Fire Chief Swingley, of that city. The car is adapted to the work of a fire chief.

Another Denver Garage—A garage costing \$30,000 and having a frontage of 75 feet will be erected in Denver, Col., this spring. D. Carson Fleming is at the head of the project.

Ford Makes Non-Stop Run—A. J. Edwards, Portland,

Ore., manager of the Ford car, recently conducted a non-stop run, the car completing in the 7 days' continuous run 2,391 miles.

Warring Against Cut-Outs—Director Bargar, of the police department of Columbus, O., has issued strict orders to the patrolmen to arrest every automobilist who fails to keep his muffler closed.

Big Garage Fire—Fire in the establishment of the Grand Boulevard Garage Company, Chicago, Ill., recently destroyed twenty-seven cars. The loss on the building and stock is estimated at \$100,000.

To Operate Taxicabs—Joseph's Garage, Columbus, O., has started a taxicab department in connection with the care and repair of cars. The taxicab department will include both taxis and touring cars for hire.

Buys Street Truck—Delivery has just been made to the street department of the city of Seattle, Wash., of a 3-ton Gramm truck on which has been mounted a dumping body patented by Mr. McKee, who is connected with the department.

Leases Larger Quarters—To provide larger quarters in which to entertain the centennial visitors, the Columbus Automobile Club, Columbus, O., has closed a lease for 3 years on the ground floor of the Virginia Hotel.

Tours to Frisco and Vancouver—San Francisco will be the destination of the principal run of the season of the Automobile Club of Seattle, Wash. Vancouver, B. C., will be the terminus of another of the summer tours, and either Gray's Harbor or Portland will be designated as the end of the third.

Boston Mayor's Plan—Mayor John F. Fitzgerald, Boston, Mass., has sent letters to the officials in charge of the Franklin Institute and the Wentworth Foundation, two of the manual training schools connected with Boston's school system, urging that some arrangement be made whereby young men may learn how to drive and care for motor trucks.

A New Garage—Jack Gottenberg will build a new garage on his lot on Napa street, Sonora, Cal.

Garage for Placerville—A \$5,000 garage is the latest improvement projected for Placerville, Cal.

Woman Patents Windshield—Anna K. Gilson, Wilmington, Vt., has been granted a patent on a rain and wind shield for automobiles.

Automobile Business Trip—Twenty-five motor cars will soon set out from LaGrange, Ga., on a Get-the-Business tour throughout Troup and surrounding counties.

Motor Company Moves—The American Motor Company announces its removal from 1034 South Main street to Sixteenth and Hill streets, Los Angeles, Cal.

Highway Improvement—During 1912 \$1,250,000 will be expended for highway improvement in Wisconsin, according to the highway commission of that state.

Murphy Purchases Property—John J. Murphy has purchased the Lord block on Water street, Corning, N. Y., and intends to turn it into an automobile garage.

Open Salesrooms—The Highland Garage, Inc., Birmingham, Ala., has leased a building on Second avenue which has been converted into an automobile showroom.

Laycock Chief Engineer—A. M. Laycock has been engaged as chief engineer of the automobile axle department of the Sheldon Axle Company, Wilkes-Barre, Pa.

Sheridan with Willys-Overland—Hal Sheridan has been appointed supervisor of district managers of the Willys-Overland company with headquarters at Toledo, O.

Great Southern Opens Offices—The Great Southern Automobile Company has opened sales offices in the Empire building, Birmingham, Ala., with W. O. Fields, secretary.

Elmhurst Station Garage Opened—The garage known heretofore as Wilkin's Garage, Elmhurst, N. Y., was reopened recently under new management as the Elmhurst Station Garage.

Morgan Joins Standard Electric—Another addition has been made to the salesforce of the Standard Electric Car Company, Jackson, Mich. F. S. Morgan has joined the company as a special representative.

Taxi Man Buys Land—R. C. Edwards, owner of the taxicab stand at Atlantic and North Carolina avenues, Atlantic City, N. J., has purchased property for \$35,000 upon which he will erect a two-story garage.

W. M. Botto Resigns—W. M. Botto, formerly vice-president of the Abbott-Detroit and Regal Sales Company, New York City, has tendered his resignation and severed all connection with both companies.

Warren Garage Opened—A garage has been opened in Warren, Ill., which will handle a general line of supplies and will have a well-equipped machine shop. It is operated by the Warren Auto & Supply Company.

Waterbury Has Taxis Now—Waterbury, Conn., is the latest New England city to become addicted to the use of taxicabs, the E. H. Towle Company having purchased three 28-horsepower Maxwells for its service.

More New England Shows—Motor shows were held in New Bedford, Mass., and Manchester, N. H., recently, and according to the reports there was a large attendance at each place and the shows were very successful.

Pound Appointed Manager—The Rowe Motor Truck Company, Coatesville, Pa., has appointed George I. Pound general Eastern sales manager, with temporary headquarters at 327 East Eighty-fourth street, New York City.

Builds New Addition—The Urbana Automobile Company, Champaign, Ill., will erect an addition to its garage, 50 by 100 feet, of brick and concrete construction. When completed the building will have a floor-space of 12,000 square feet.

Colby Reorganized—There has been a reorganization of

this company by the re-election of William M. Colby as president, James A. Colby as vice-president, and H. L. Murphy as secretary and general manager, and the election of a new board of directors.

Regal Salesmen Convention—Representing every district in the United States except the extreme Pacific states, the traveling salesforce of the Regal Motor Car Company recently came together at Detroit, Mich., for a joint session with the factory sales managers.

Parkersburg Garage Being Built—What will be one of the largest automobile garages in the state of Pennsylvania is now in course of construction in Parkersburg, Pa., by L. G. Meed and E. W. St. Clair under the name of the Market Garage & Machine Company.

Whitmore Appointed—L. E. Whitmore, Dallas, Tex., was recently notified of his appointment as sales manager for the Franklin Automobile Company, Syracuse, N. Y., in the territory including the states of Texas, Arizona, New Mexico, Louisiana, Arkansas and Oklahoma.

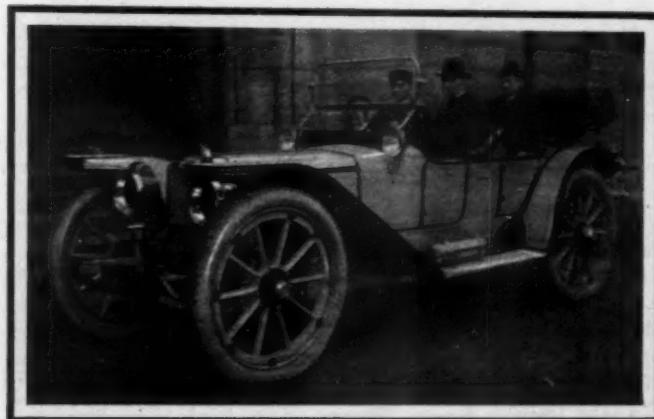
Automobile Thieves Active—As a result of the activity of a band of automobile thieves in Boston, Mass., the police departments of Boston and surrounding cities and towns have been asked to try to round up the gang. Within a few weeks at least half a dozen cars have been stolen in Boston.

Drivers' School—The Ohio Motor Car Company, Cincinnati, O., has included a course of instruction for drivers of Ohio cars in the company's service department. The course, as outlined, includes a week spent at the factory following the various parts through the course of manufacture, and a week in a car.

New Swinehart Agents—The following have taken the agencies for Swinehart tires: Rasher & Cuyton, with headquarters in Los Angeles, Cal.; A. A. Parrish, Valdosta, Ga.; the Burroughs-Morse Corporation, Providence, R. I.; the Lafayette Tire Company, Lafayette, Ind., and the Wilson Vulcanizing Company, Augusta, Ga.

Federal Spreading Out—The Federal Motor Car Company, Pittsburgh, Pa., which up to April 1 represented the Ohio car in Pittsburgh, has now become distributor for western Pennsylvania and northern West Virginia. The Federal company, under the guidance of president and general manager J. H. McClaren, also represents the Oldsmobile.

To Stop Joy-Riding—The board of governors of the Bridgeport, Conn., Automobile Club has passed a resolution asking the police officers to aid the club in putting a stop to joy-riding by chauffeurs. The plan proposed is to have the police take the numbers of all cars seen on the streets after midnight and send them to the club. The motorists will then be notified and an owner will know whether or not his car is being used unlawfully and he can proceed accordingly. The police department has promised its co-operation.



St. Louis fire chief answers alarms in an American Traveler



New service plant of the Lozier Company in Cleveland, O.

Cotter Takes Spitfire—T. A. Cotter, Boston, Mass., has taken the agency for the Spitfire spark-plugs for New England.

Ellis Opens in Boston—The Ellis Steel Cushion Tire Company has joined the Boston, Mass., colony and has opened headquarters at 585 Boylston street.

Monday Granted Top Agency—A. J. Monday, Milwaukee, Wis., has been granted the state agency for the Golde top for motor cars.

To Distribute Empire Tires—The T. G. Northwall Company, Omaha, Neb., has been appointed distributor of Empire tires for Nebraska.

To Sell Swineharts—The W. B. Guyton Tire & Rubber Company, Los Angeles, Cal., has taken the agency for Swinehart tires in that city and vicinity.

McKeen New York Office—The McKeen Motor Car Company, Omaha, Neb., recently opened an office in the Hudson Terminal building, 30 Church street, New York City, and appointed Stephen D. Barnett, Eastern representative.

Lorain Company Changes Name—Papers have been filed with the secretary of state changing the name of the C. M. Lippert Auto Company, Lorain, O., to the Lippert & Hackenbranch Auto Company.

Measure Goes to Federal—The appointment of Charles Measure as manager of the carriage and motor truck tire department of the Federal Rubber Manufacturing Company, Milwaukee, Wis., will be of interest to the vehicle rubber trade.

Milwaukee Buys Truck—The city of Milwaukee, Wis., has purchased a 1 1/2-ton Mitchell truck from the Mitchell Automobile Company, of Milwaukee, for the use of the fire and police alarm telegraph system.

Buy Western Motor Supply—Charles J. Parker and Alex Robertson have bought the business of the Western Motor Supply Company, Minneapolis, Minn., and will continue the business. Mr. Parker is manager for the Tri-State Rubber Company and will merge it in the Western Motor.

Many White Bear Garages—The White Bear Automobile Company, Minneapolis, Minn., will open its new \$80,000 garage at Sixth and Franklin streets, about May 1, and a month later a new garage at Grand avenue and Grotto street, and possibly a third on East Seventh street. The company will continue its present garage at 199 West Fifth street and one at White Bear Lake.

New Electric Garage—The St. Paul Construction Company, St. Paul, Minn., has begun work on a new service garage for the Foster-Lawrence Company at Grand avenue and St. Albans street. The building will cost \$15,000 and will be ready May 15. It is to be 50 by 150 feet, of brick and steel, and equipped with modern motor generator system for taking care of forty electrics.

Apple Detroit Branch Moves—The Apple Electric Company has moved its Detroit, Mich., headquarters from 1005

Woodward avenue to 1310 Majestic building. Mr. F. G. W. Sudrow, formerly in charge, has been called to the factory at Dayton to take the position of sales manager. He will be succeeded in Detroit by H. J. Shire, formerly of the Roller-Smith Company. Mr. Shire will become district manager. J. C. Slager has been appointed assistant manager.

Motor Patrol for Newton—Chief of Police Fred Mitchell, Newton, Mass., has just added a motor patrol and combination ambulance to the police equipment of Newton. It was built under his specifications by the Knox company. Chief Mitchell has the distinction of never having driven the motor wagon in which he makes his rounds beyond the boundary line dividing Newton from its neighboring cities and towns, taking the stand that it is Newton property and as such should not be used outside its own territory.

New Lozier Service Building—The Lozier Motor Company, Detroit, Mich., has recently taken possession of the new Lozier service building at Cleveland, O. The building is a two-story fireproof structure of steel and concrete and is especially well designed with regard to lighting arrangements. An expert staff of mechanics trained at the Lozier factory is maintained in connection with the repair department, which is sufficiently equipped to care for all ordinary repairs to cars. The building is under the supervision of the manager of the Cleveland branch.

White Increases Stock—The White Motors Company, of New Haven, Conn., has had such a profitable business that the capital stock of the company has been increased from \$5,000 to \$20,000 to allow the company to take care of its enlarged business. A reorganization of the company followed and new officers were chosen as follows: Percy H. Greist, president; E. H. Dowson, vice-president; W. F. Alcorn, secretary; H. M. Greist, treasurer. William A. Rutz is general manager. Messrs. Dowson and Alcorn are the new members of the company.

Automobile Incorporations

AUTOMOBILES AND PARTS

CLEVELAND, OHIO—Peet Machine Company; capital, \$10,000; to manufacture automobile parts and accessories. Incorporators: A. J. Peet, C. J. Robison, S. T. Peet, I. F. Allen, B. V. Selby.

CLYDE, OHIO—Clyde Auto Sales Company; capital, \$10,000; to deal in automobiles.

EAST ORANGE, N. J.—Aymar & Bradley Company; capital, \$50,000; to deal in automobiles and motorcycles. Incorporators: H. H. Picking, C. O. Geyer, F. E. Ruggles.

ELIZABETH, N. J.—James S. Griffen Company; capital, \$10,000; to manufacture automobiles, tires, tubes, etc. Incorporators: E. M. Scanlon, A. R. Eaton, Jr., R. L. Eaton.

EUREKA, CAL.—Knudsen-Lundblade Company; capital, \$25,000; to deal in automobiles. Incorporators: Oscar Knudson, Fred H. Lundblade, James F. Coonan.

EVANSVILLE, IND.—Victor Automobile Company; capital, \$8,000; to manufacture automobile parts. Incorporators: P. B. Fellwock, W. E. Fellwock, J. F. Fellwock, H. F. Nolte.

GREENWICH, CONN.—Porto Rico Motors Company; capital, \$150,000; to manufacture automobiles. Incorporators: Milton A. Mills, Jr., Loring I. Whiteside, Edward J. Ryan.

JERSEY CITY, N. J.—Atlantic Vehicle Company; capital, \$340,000; to manufacture vehicles of all kinds. Incorporators: M. Black, L. R. Jillson, J. R. Turner.

MANISTEE, MICH.—Manistee Motor Company; capital, \$51,000; to manufacture automobiles and motors. Incorporators: Charles Elmendorf, George M. Burr.

NEW YORK CITY—Havers-Imperial Auto Sales Company, Inc.; capital, \$25,000; to deal in automobiles. Incorporators: Milton Mayer, James McBrien, John F. Barrett.

SALT LAKE CITY, UTAH—Salt Lake Automobile Company; capital, \$25,000; to manufacture automobiles. Incorporators: Ashby Snow, A. L. Taylor.

TOLEDO, OHIO—Dennis Motor Company; capital, \$25,000; to deal in automobiles and accessories and conduct a repair shop and garage. Incorporators: H. H. Dennis, G. W. Close, Allen E. Reid, R. S. Woodrow, John G. Meister.

UTICA, N. Y.—Xardell Kerosene Engine Company; capital, \$100,000; to manufacture engines and machinery. Incorporators: Benjamin T. Gilbert, George A. Frisbie, Joseph A. Xardell.

YONKERS, N. Y.—Yonkers Auto Service Company, Inc.; capital, \$2,000; to manufacture automobiles. Incorporators: G. G. Fry, Frank P. Hoffman, Edward Keale.

INCREASES OF CAPITAL

FOND DU LAC, WIS.—Giddings & Lewis Manufacturing Company; increases capital from \$68,000 to \$200,000. Manufacturers of engines and machinery; are adding a new department for the manufacture of pneumatic machine tools.

MUSKEGON, MICH.—Muskegon Motor Specialty Company; increases capital from \$30,000 to \$100,000.

Top Company Moves—The offices and showrooms of the Broad Street Top Company, Philadelphia, have been moved to the fourth floor of 142 North Broad street.

Open Garage at Cashmere—The Cashmere Garage, Cashmere, Wash., has been opened with temporary quarters in the Gehr building. T. Paine, Jr., is in charge.

Arle Buys Tire Business—Joseph Arle has purchased the business of the Lake Shore Tire Company, Sheboygan, Wis. J. E. Schuerle, manager of the company, will establish a similar business elsewhere.

Price of Lamps Lowered—A reduction of 2 cents per lamp has been made by the General Electric Company, New York City, on frosted tungsten lamps for automobile lighting. The former price of this type of lamp was 65 cents.

From Church to Garage—T. H. Jacobs has purchased the Christian Science church building at Wausau, Wis., and will remodel it into a garage and salesroom. He will use his present building as a warehouse and auxiliary showroom.

Service Replaces Storage—Because of the lack of space due to increased business the Zell Motor Car Company, Baltimore, Md., has decided to do away with the storage department. The storage room will be used in the new service department.

Cochran Tendered Cup—In recognition of his services the show association conducting the Exposition Automobile Show, which was recently held in Pittsburgh, Pa., presented general manager Thomas I. Cochran with an elaborate silver cup.

Takes Tire Agency—The Curtis Auto Company, 142 Eighth street, Milwaukee, Wis., has taken the state agency for the Car Spring tire, manufactured by the New Jersey Car Spring & Rubber Company, and will also conduct an extensive service department.

Yoa Occupies Garage—George Yoa, Spracuse, N. Y., is moving into his new garage at 1057 South Clinton street. The building is 110 feet long and has a frontage of 40 feet. It has a basement and is two stories high. A repair shop, showroom and general storage quarters are features.

Buys Garage Site—The Pittsburgh-Chalmers Company, Pittsburgh, Pa., has purchased a 50-foot frontage on Louisa street for \$20,000 as a site for a building to be used as a display room, business office and repair department. The structure has already been planned. It is said that it will cost \$40,000.

Block for Goodyear—Plans have been prepared by C. W. Bellows for a three-story business block to be erected by the McAllister-Mohler Company at Fourth and Elm streets, Columbus, O., which will be occupied by the Columbus branch of the Goodyear Rubber Company. The structure will be 37 by 75 feet.

Publishes House Organ—The Waukesha Motor Company, Waukesha, Wis., has issued a house organ named *Power and Efficiency*. This number, which is for January and February, contains an interesting account of some practical tests made of the metals used by the company, besides descriptions of the company's product and other readable matter.

To Operate 'Bus Line—A company is being organized at Sheboygan, Wis., to operate a motor transportation service for passengers and freight between Sheboygan and important cities and villages in Sheboygan County. The company intends to purchase two Autocar 'buses for passenger service and two motor trucks of 2 1/2 and 5 tons capacity for freight use.

Engineering Course in Pittsburgh—A course in automobile engineering will be added to the curriculum of the Carnegie Technical Schools, Pittsburgh, Pa. The new department will be under the dean of the School of Applied Design and will be opened upon the completion of Machinery Hall, a building more than 200 feet square, which is now in course of construction.

Elliott After Cut-Outs—Secretary Frederick H. Elliott, of the Touring Club of America, with headquarters at Albany, N. Y., has communicated with the automobile clubs at Auburn and other cities asking that they request the aldermen to take action toward the mitigation of the muffler cut-out nuisance. Mr. Elliott calls attention to ordinances now in force in Syracuse and Newburg forbidding the use of cut-outs within corporate limits.

Makes Own Car—The Chippewa Valley Auto Company, Chippewa Falls, Wis., has constructed a 26-horsepower car of its own design, to be used as a service car. The manufacturing work was done by the Phoenix Manufacturing Company, Eau Claire, Wis., a large builder of gasoline engines, tractors, etc. The unique feature of the new car is its removable unit power plant, which may be hoisted out of the car and transferred to a motor boat hull constructed especially for the purpose.

Automobile Incorporations

GARAGES AND ACCESSORIES

AKRON, OHIO—West Hill Garage Company; capital, \$12,000; to deal in automobile supplies and operate a garage and repair shop. Incorporators: Samuel A. Kepler, Arthur O. Wood, Mary I. Stouffer, Newton D. Bartram, E. L. Baumgardner.

BROOKLYN, N. Y.—Alpha Rim Company; capital, \$100,000; to manufacture automobile wheels and rims. Incorporators: C. M. O'Donnell, G. H. Tice.

BROOKLYN, N. Y.—D. S. P. Automobile Specialty Company; capital, \$5,000; to deal in automobile specialties. Incorporators: Chas. F. Sendall, Wm. Price, George Sendall.

BROOKLYN, N. Y.—Eureka Non-Skid Manufacturing Company; capital, \$2,500; to manufacture automobile accessories. Incorporators: H. E. Bradford, James Colbourne, Brown Riston.

CINCINNATI, OHIO—Oskamp Auto Supply Company; capital, \$25,000; to deal in automobile supplies. Incorporators: W. S. P. Oskamp, W. H. Oskamp, E. G. Oskamp, W. V. Oskamp, Charles E. Classon.

CINCINNATI, OHIO—Price Hill Auto & Garage Company; capital, \$1,000; to do a general garage business. Incorporators: F. C. Williams, R. A. Miller, Phil. Tieman, W. A. Connor, H. H. Brogan.

INDIANAPOLIS, IND.—Gibson Motor Starting Company; capital, \$5,000; to manufacture and sell self-starters. Incorporators: R. K. Allison, Bert Gibson, R. B. Allison.

LOUISVILLE, KY.—Sutherland Automobile Appliance Company; capital, \$10,000; to deal in automobile supplies and accessories. Incorporators: Luke Sutherland, Cad Burba, M. W. McGrath.

MINNEAPOLIS, MINN.—Speed Punctureless Tire Company; capital, \$300,000; to manufacture punctureless tires. Incorporators: W. H. Shafer, E. D. Moor, E. P. Ernster.

NEWARK, N. J.—North Jersey Auto Supply Company; capital, \$80,000; to deal in automobile supplies. Incorporators: E. C. Mehrhof, F. W. Mead.

NEW YORK CITY—Charles H. Tucker Company; capital, \$100,000; to manufacture tires, inner tubes, etc. Incorporators: C. H. Tucker, Edward B. Wood, H. W. Solomons.

NEW YORK CITY—Eighteenth Street Garage Company; capital, \$5,000; to conduct a general garage business. Incorporators: W. F. Donnelly, Daniel E. Pee; Abraham E. Magnus.

NEW YORK CITY—Market Auto Garage Company; capital, \$1,000; to conduct a general garage business. Incorporators: P. Garofalo, John Sivilia, J. M. Vincent.

NEW YORK CITY—Mitchell-Edmonston Garage, Inc.; capital, \$10,000; to operate a garage and repair shop. Incorporators: L. A. Mitchell, G. W. Edmonston, J. P. Bickerton.

NEW YORK CITY—Strong Rubber & Asbestos Manufacturing Company; capital, \$75,000; to mine asbestos and manufacture goods. Incorporators: C. E. Strong, A. D. Curria.

RIVERHEAD, N. Y.—Vail-Campbell Company; capital, \$5,000; to conduct an automobile repair shop. Incorporators: H. E. Campbell, R. H. Vail, K. Campbell.

WILMINGTON, DEL.—Automobile Tire Filling Company; capital, \$100,000; to manufacture a patent tire filler. Incorporators: M. L. Rogers, S. E. Robertson, H. W. Davis.



KisselKar bus used by the Hotel Stockton, at Stockton, Cal.



Alco truck used in hauling Tarvia for road improvement

Oakland Kansas City Branch—The Oakland Motor Company, Pontiac, Mich., has established a branch in Kansas City, Mo.

To Handle Bergdoll—The Bergdoll Car Company of Missouri has been organized at Kansas City, Mo., as a direct factory branch. Ivan De Mitkiewisz is manager.

Mason Gives Land—F. H. Mason, vice-president of the Goodrich Rubber Company, Akron, O., has donated 20 acres of land to the city for a playground for children.

Garages Must Be Fireproof—Consistent with the move for doing away with fire menace, the common council has decided that garages erected in the future in Kalamazoo, Mich., must be fireproof.

Object to Police Methods—The Chauffeurs and Carriage Drivers' Union, Boston, Mass., has called a special meeting for Sunday, April 7, to take action on what the members allege is too much police persecution.

Enters Tire Business—The Walpole Rubber Company, Walpole, Mass., has embarked in the tire business and sales-rooms have been opened on Boylston street, Boston. E. P. Weber is manager of the tire department for the company.

Trucks Replace Horses—Fielbach & Co., Toledo, O., wholesale grocers, have discarded their entire horse-drawn equipment for a fleet of Grabowsky commercial trucks. The deal was closed through the Banting Machine Company, of Toledo.

Minnesota Defines Chauffeur—Ruling has been made by the state legal department on the Minnesota vehicle law that a chauffeur is a person who drives an automobile on public streets as the employee of another, whether his employment is incidental or occasional.

McKay a Sales Manager—L. A. McKay has been appointed sales manager of the Franklin Automobile Company, Syracuse, N. Y., for the St. Paul and Omaha territory, which includes the states of Minnesota, Wisconsin, the northern

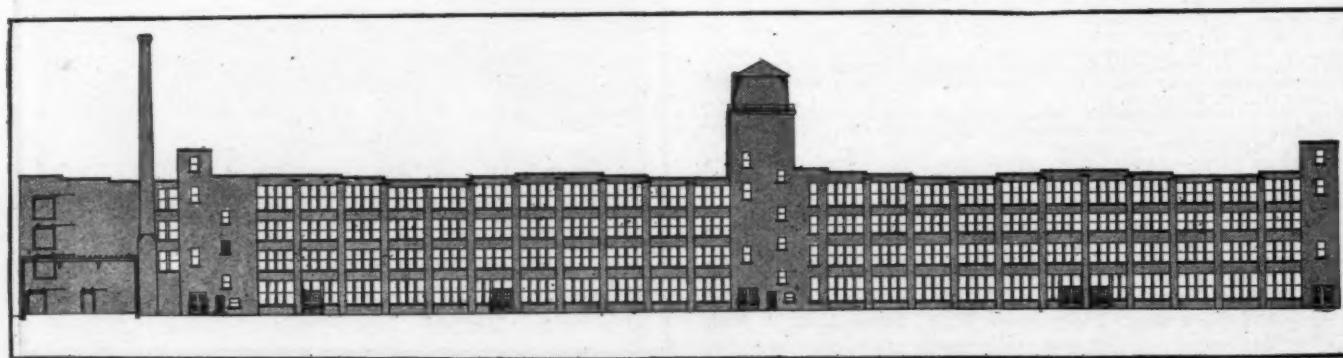
New Automobile Agencies

PLEASURE CARS		
Place	Car	Agent
Alliance, Neb.	Cartercar	Nebraska Land and Auto Co.
Atlanta, Ga.	Pullman	Lawrence and Baldwin.
Anderson, Ind.	Mitchell-Lewis	Auto Inn Co.
Binghamton, N. Y.	Alco	H. W. Brown.
Binghamton, N. Y.	Lion	L. W. Springsteen.
Boston, Mass.	Alpina	C. C. B. Merrill.
Boston, Mass.	Elmore	Regent Circle Garage Co.
Boston, Mass.	Brush	Kimball Bros. Co.
Cincinnati, O.	White	Central Motor Sales Co.
Decatur, Ill.	Alco	White Motor Car Company.
Dorchester, Mass.	Staver	Augustus E. Staley.
Erie, Pa.	Alco	John E. Morrill.
Erie, Pa.	Lion	Park Auto Co.
Fort Plains, N. Y.	Franklin	G. E. Gamper.
Galion, Ohio	Ford	Rebell Garage Co.
Grand Junction, Colo.	Hupmobile	Clarence Dice.
Grand Rapids, Mich.	Jackson	H. L. Platt.
Harlan, Ia.	Cartercar	Bruff W. Olin.
Harrisburg, Pa.	Alco	Louis Christiansen.
Haverstraw, N. Y.	Franklin	William J. Mehring.
Hyannis, Neb.	Cartercar	J. W. Gillies.
Jackson Center, Ohio	Maxwell	Samuelson Bros.
Jacksonville, Fla.	Alco	Rogers Garage & Light Co.
Jacksonville, Fla.	Case	Guy R. Champlain.
Jerusalem, Ohio.	E. M. F. Flanders	J. P. Campbell.
Kansas City, Mo.	Elmore	Brown & Wiley.
Kansas City, Mo.	Stearns	Elmore Valveless Motor Co.
Kansas City, Mo.	Stutz	Holmes & Howe.
Kendallville, Ind.	Mitchell	Willis L. Talb.
Lincoln, Neb.	Inter-State	J. T. Reyher.
Ludington, Mich.	Mitchell	Cover & Allen.
Madison, Wis.	Ford	Ludington Auto & Supply Co.
Matador, Texas	Franklin	Hofweber & Son.
McConnellsburg, Ohio	Ford	Jack Luckett.
Mexico City, Mexico	Ohio	Morgan County Garage Co.
Milwaukee, Wis.	Alco	Chihuahua Motor Car Co.
Minneapolis, Minn.	Lion	Franklin Auto & Supply Co.
Montreal, Can.	National	Power Equipment Co.
Newark, Ohio	Overland	Massicott & Co.
New Haven, Conn.	Franklin	T. H. Foos.
Oakville, Wash.	Ford	Cowles Tolman.
Philadelphia, Pa.	Kline Kar	Oakville Auto Co.
Philadelphia, Pa.	Lion	Kline Kar Sales Co.
Portsmouth, N. H.	Alpina	Union Motor Car Co.
Portsmouth, N. H.	Kissel Kar	Horace P. Seymour.
Providence, R. I.	Peerless	W. K. Patterson.
Salt Lake City, Utah	Franklin	J. L. Snow.
San Francisco, Cal.	Alco	Salt Lake City Auto Co.
San Francisco, Cal.	Moon	Auto Sales Co.
Scio, Ohio	Mitchell-Lewis	Kiel & Evans Co.
Sheridan, Wyo.	Maxwell, Columbia	Marks & Kraft.
Somersworth, Maine	Abbott-Detroit, Krit.	E. F. Tisch.
St. Paul, Minn.	Bergdoll	Matthews & Langley Auto Co.
Tacoma, Wash.	Apperson	Martin Motor Co.
Toledo, Ohio	Alco	Jesse Jones.
Toledo, Ohio	Oakland	H. H. Dennis.
Toronto, Canada	Alco	Baumgardner & Kirby.
Urichsville, Ohio	Rambler	T. A. Crow.
Wadsworth, Ohio	Ford	C. E. Molesworth.
Warren, Ill.	Hupmobile, Hudson	S. H. Hockensmith.
Washington, D. C.	Marmon	Warren Auto & Supply Co.
Washington, D. C.	Michigan	Reo.
Wausa, Neb.	Cartercar	Potomac Motor Car Co.
Wilkes-Barre, Pa.	Kline	Probey Carriage Co.
Woodsfield, Ohio	Ford	Otto Hult.

COMMERCIAL VEHICLES

Place	Car	Agent
Atlanta, Ga.	Grabowsky	Adams-Price Automobile Co.
Philadelphia	Sandusky	Automobile Repair & Sales Co., Inc.
Syracuse, N. Y.	Kelly-Springfield	W. R. Shaw.

peninsula of Michigan, North Dakota, South Dakota, Nebraska, Kansas, Missouri, western Iowa and the provinces of Manitoba and Saskatchewan. Mr. McKay has moved to his new headquarters at Minneapolis, Minn.



New addition to the plant of the Metzger Motor Car Company, Detroit, Mich.

MAKES 300 RADIATORS A DAY—The factory of the McCord Manufacturing Company, Detroit, Mich., contains 111,000 square feet of floor-space and the company is considering an addition of 30,000 square feet. The radiator output of the plant is approximately 300 a day. A great number of other automobile parts and fittings are manufactured. At present the company is employing 850 men.

Ohio's Canadian Plant—The Ohio Motor Car Company, Cincinnati, O., is planning to erect a Canadian factory at Coborne, Ont., which is situated on Lake Ontario 84 miles east of Toronto.

Change of Name Sanctioned—The State Department of Ottawa, Ont., has sanctioned the change of the name of the Overland Automobile Company of Canada to that of United Motor Company, Ltd.

Another Mack Factory—The Mack Brothers Auto Company, Allentown, Pa., has purchased the plant of the Unity Silk Company, of that city, and, after some alterations have been made, will equip it with machinery for making trucks.

Berkshire Planning Plant—The Berkshire Motor Company, Cambridge, Mass., is planning the construction of a three-story manufacturing building in that city. The plans provide for a structure 50 by 239 feet, with provision for adding two additional stories later. It will be of reinforced concrete. A boiler house, 24 by 29 feet, will also be erected.

To Open Truck Plant—The Leitner Motor Truck Company, Kenton, O., will open its factory in about 4 weeks, occupying the Carter building on West Franklin street. L. Leitner, head of the concern, closed a contract with the Kenton Commercial Club for the plant. The articles of incorporation have been prepared and will be filed with the secretary of state soon. It is expected to employ about twenty-five men from the start.

Northwestern Acquires Plant—The Northwestern Chemical Company, Marietta, O., maker of Se-Ment-Oil and other automobile specialties, has purchased the property of the Chapin Pants Factory in that city and is preparing to move into the newly acquired plant at once. It is a large frame building, 41 by 128 feet, with two stories and basement. It gives the company 15,000 feet of floor-space. Preparations are being made for the installation of a large number of new machines, such as mixers, package fillers, etc., in order to increase the output.

Warner Factory Growing—The Warner Instrument Company, Beloit, Wis., manufacturing the Auto-Meter and other de-

vices, has awarded contracts for the erection of a large addition to care for its growing speedometer business. The new building will be 100 by 100 feet. The company has just closed a contract with the Cadillac Motor Car Company, Detroit, Mich., for 15,000 Auto-Meters.

Case Adds Power Plant—The J. I. Case Threshing Machine Company, Racine, Wis., is building a new central power, heat and light plant at a cost of \$75,000. Work will be started soon on extensive additions to the motor car works, where Case cars are built.

Duplex Company Moves—The Duplex Coil Company, Fond du Lac, Wis., is moving its works to Bay City, Mich., where the Business Men's Association has raised a fund of \$15,000 as a bonus. The company manufactures coils, batteries, magnetos and electric lighting systems and has been located at Fond du Lac, Wis., for 7 years. E. J. Huber is president.

New Tire Factory—The Tyer Rubber Company, Andover, Mass., has placed the contract for the building of its new automobile tire factory with the B. F. Smith Construction Company, Pawtucket, R. I. Work will be started at once and it is expected that the factory will begin producing tires by August 15. The latest modern machinery is being installed. The company will employ 400 hands and will have a capacity of 600 tires a day.

Columbus Wants Cadillac—The Columbus, O., Chamber of Commerce is making an effort to secure the location of the new plant to be built by the Cadillac Motor Car Company, which announces that it will leave Detroit, Mich. Assistant Secretary F. H. Hysell, of the Chamber of Commerce, presented to the company the many advantages of Columbus as a shipping point. It is announced that the new plant will be located in either Ohio or Indiana, and the city making the best showing as to transportation facilities will secure it.

To Make Pleasure Cars—The Anger Engineering Company, Milwaukee, Wis., has been organized by Walter A. Anger, a well-known automobile tradesman, with a capital stock of \$10,000. Mr. Anger has been working on a new type of pleasure car for 2 years and is now ready to commence its manufacture. He is the inventor of several self-starting devices and is credited with having, in company with George L. Odenbrett, perfected the first device of this kind ever invented. In the new corporation Mr. Anger has associated with him Bernhard F. Anger and Carl Luenzmann. The capitalization will be considerably increased as the operations of the company progress.



Bird's-eye view of the radiator factory of the McCord Manufacturing Company at Detroit, Mich.

Newest Ideas Among the Accessories

Force-Feed Oiler; Non-Skid Tire; Repair Pliers; Invisible Hinge; Truck Tires; Eb-O-Rundum Black Varnish; Pennsylvania Metal Tubing

Bosch Force-Feed Oiler

THE new force-feed lubricator made by the Bosch Magneto Company, New York City, is illustrated in detail in Fig. 1. The mechanism consists of a number of oil pumps or elements, the pumps being of the plunger type. One of the pumps or elements is shown in section. It is held in position by screws and is composed of a pump plunger reciprocated by the upper of two cam disks, and of a valve plunger positively controlled by the small, lower cam disk. The drive of the lubricator which is transmitted from the crank or camshaft is by means of a worm and gear, the latter carrying the shaft to which a sleeve with the two cam disks is attached. This arrangement

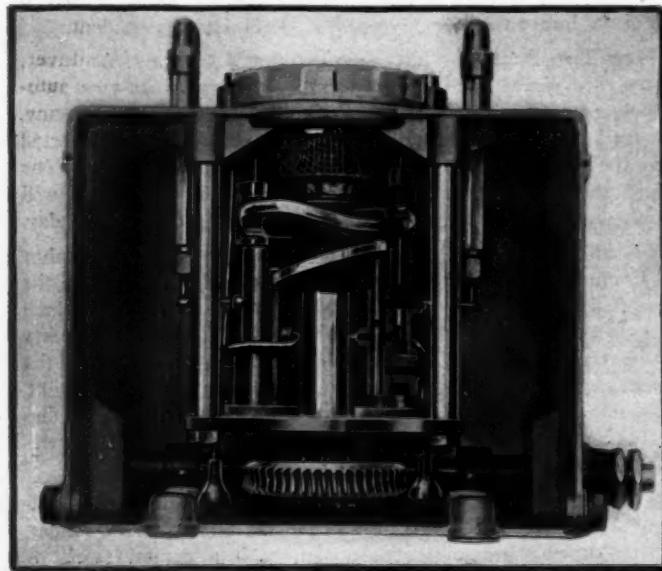


Fig. 1—Internal construction of Bosch force-feed oiler

is not disturbed by the addition or removal of pump elements, there being provision for eight of these. The stroke of each individual pump plunger is adjustable from the top of the casing. The pump element is of brass and when the pump plunger is in its top position, the valve plunger is well down on its stroke and provides a passage from the interior of the oiler casing, through a strained passageway, to the cylinder in which the pump plunger works. As the latter descends, the valve plunger rises and the oil is forced out of the pump cylinder and up through a sight-feed to the part to be lubricated.

When the oil is poured into the lubricator it passes through a coarse screen, and is screened again when it passes into the pump elements to keep the finer foreign matter out of the feed pipes. The horizontal shaft which carries the driving worm may be driven from either end and in either direction, as the relative positions of the pump and valve plungers are fixed by the disks.

Keaton Non-Skid Tire

A tire casing with a novel design of non-skid tread is the Keaton tire, Fig. 5, made by the Swinehart Tire & Rubber Company, Akron, O. The inequality of the tread is obtained by the use of depressions instead of the projections used in many other

designs. The depressions are in the form of diamond-shaped grooves, and while they provide an anti-skid tread, according to the Swinehart company, the actual tread surface is far in excess of other treads designed for the same service. The maker also claims that this tire does not lose its anti-skid effect before it wears down to the carcass.

Gilmer Repair Pliers

G. Walker Gilmer, Jr., 52 North Seventh street, Philadelphia, Pa., has placed on the market a set of pliers specially adapted for spreading cuts in tires which have to be filled with cement. The pliers, Fig. 2, are shown at 1. They consist of two handles with ends turned down so as to reach into the casing, and a lever which when pressed against one of the handles wedges the handles apart. In this way the cut in the tire tread is forced open, 2, and the operator is enabled to get at the fabric. As a clean fabric is necessary in order to obtain a lasting tire repair, the Gilmer outfit also contains a cleaner, 3, which is also of use in forcing the tire cement into the wound.

Soss Invisible Hinge

An invisible hinge for fastening automobile doors to bodies is made by the Soss Manufacturing Company, 435 Atlantic avenue, Brooklyn, N. Y. The hinge is composed of two anti-friction metal plates for attaching it to the door and post, and of two sets of steel links, the form of which is indicated in Fig. 4. Alternate links are pivoted at either side and in closing the door each link slides between the two adjoining ones, into recesses in door and post. In installing the hinge it is first attached to the door after having cut out enough wood to accommodate the links of the hinge. The first part of the hinge being securely screwed on to the door, the second plate is fixed to the post.

Goodyear Commercial Tires

A full line of truck tires as made by the Goodyear Tire and Rubber Company, Akron, O., is shown in Fig. 3. The individual block tire, A, consists of a number of blocks or sections, each of which is separately arranged on the rim. The block tread is said to have the advantage that no portion of the rubber is compressed to too high a degree. Furthermore, it permits

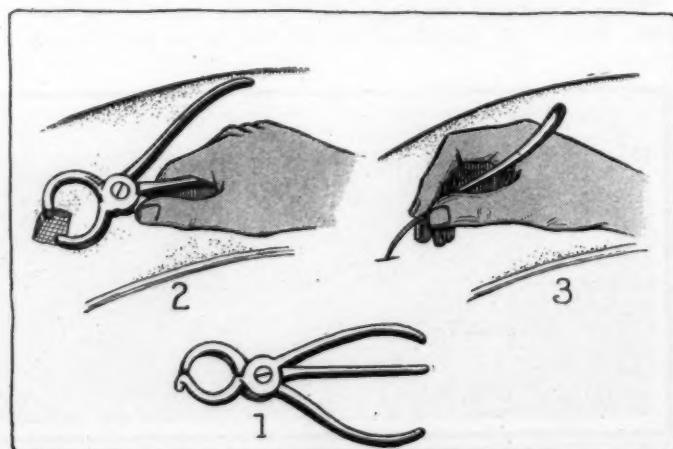


Fig. 2—Gilmer repair pliers and fabric cleaner

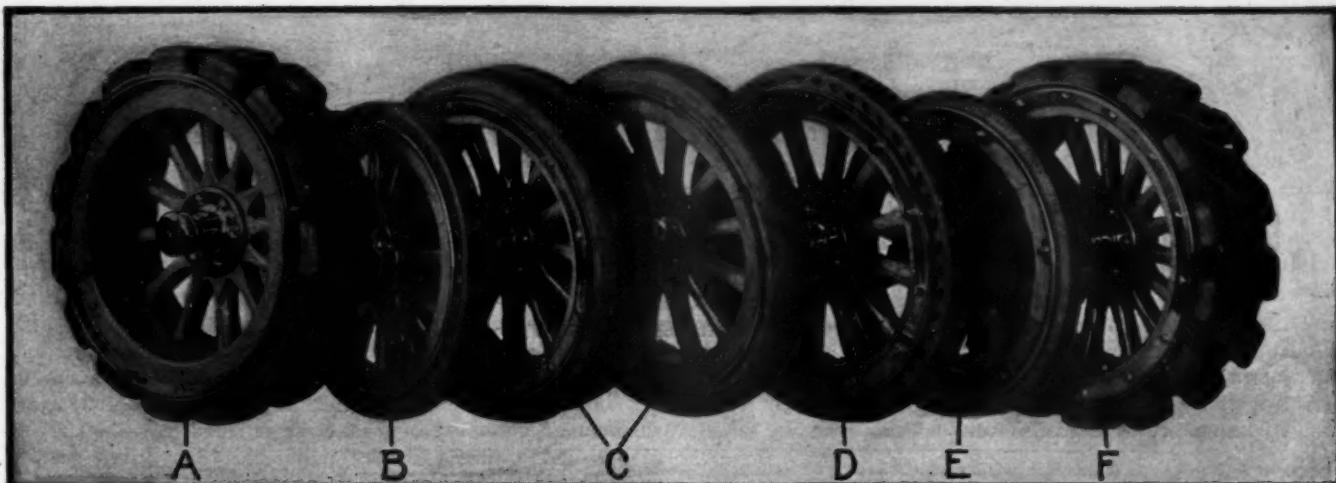


Fig. 3—Goodyear truck tires: A, Individual block tire; B, Goodyear-Motz cushion tire; C, Demountable solid tire; D, Metal-base tire; E, Fire-department tire; F, Diagonal block tire

of replacing those sections which are first worn out and of leaving the rest of the tire undisturbed. The Goodyear-Motz cushion tire, B, contains air spaces, out of which the air is pressed, when the load of the truck rests on them. As the wheel turns, the evacuated space holds the tire tightly to the road, and also counteracts any skidding tendency. The demountable track tire is seen at C, and its advantages are obvious. It is furnished in the single and dual form. Type E is specially adapted for fire department work. The diagonal block tire consists of individual blocks diagonally arranged on the rim, and giving a smoother running truck than type A, as the load is gradually shifted from section to section.

Eb-O-Rundum Black Varnish

A new deep black varnish for automobile lamps is marketed under the name of Eb-O-Rundum, by Dr. W. F. Mahoney, Westboro, Mass. This varnish is of shellac consistency and is applied to the brass parts with a brush, one application being sufficient. The varnish dries in a quarter of an hour; it contains no enamel so that heat does not cause it to blister.

Condensite Insulator

Condensite is a material which may be used for valves, magneto parts, insulation, etc. It is of chemically organic origin, which is manufactured in three forms; as a powder, as a cold plastic and in solution as an air-drying varnish. Among its properties, the fact that of being a heat and electric insulator stands foremost. It does not warp when heated, nor does it ignite or fuse in its plastic form. The powder is made for casting purposes, and is heated until it begins to flux, when it is

poured into the mold. After cooling, the volume of the material is about one-third of what it is as a powder, and is infusible. Any metal mould may be used and need not be cleaned

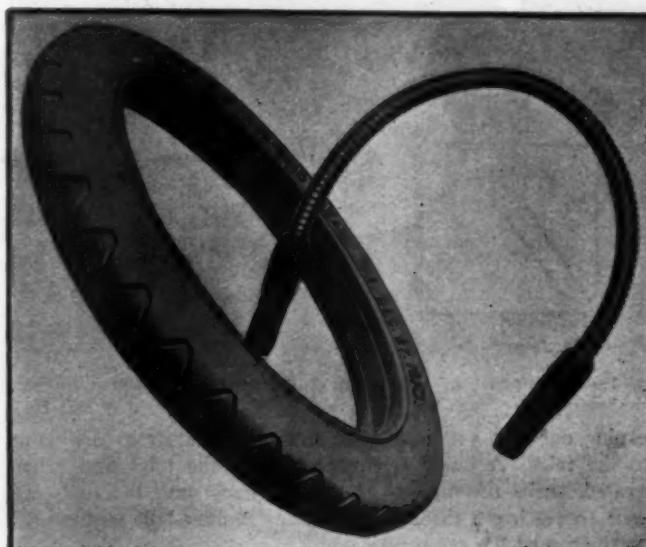


Fig. 5—Keaton non-skid tire. Fig. 6—Pennsylvania metal tubing

or oiled, as the condensite does not adhere to its walls. By exposing it to a temperature between 212 and 300 degrees Fahrenheit condensite is cured in about half an hour, but even an exposure for 48 hours to heat of 400 degrees Fahrenheit has no effect on it except to slightly decrease its weight. It is insoluble in most chemicals being quickly affected only by hot nitric acid. The Condensite Company, of America, Glen Ridge, N. J., makes and sells this material.

Pennsylvania Metal Tubing

A flexible metal tubing product which serves all the purposes for which rubber tubing is generally used, without deteriorating as does rubber, is manufactured by the Pennsylvania Flexible Metallic Tubing Company, 1305 Arch street, Philadelphia, Pa. The tubing which is designed for acetylene conduits is composed of two strips of bronze folded and pressed into interlocking relation, while the tubing intended for connecting the tire pump to the tire is made in the same way of galvanized steel and covered with fine wire lacing. Both types of tubing may be obtained in any length desired up to 50 feet. The gas tubing is made with rubber connections as in Fig. 6, while the air tubing is fitted with standard pipe coupling and acorn connection.

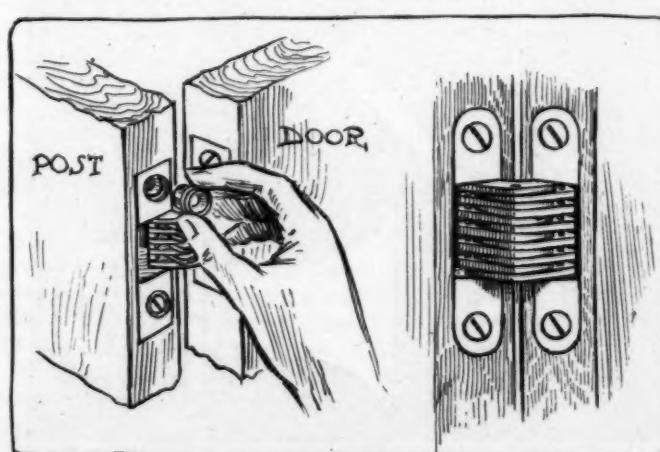


Fig. 4—Soss invisible hinge and manner of attachment

Patents Gone to Issue

O IL-CAN—In which a pump is combined with the can. This patent has reference to a receptacle, Fig. 1, with an outlet, through which a tube extends into the interior. In this tube is contained a valve V, which normally closes the inlet of the tube. In the outer end of the tube a plug, which has a central opening, is mounted, a spout being removably connected with the plug and having an enlarged base which forms a valve housing. A valve in the valve housing normally closes

its upper end and is in alignment with the first-mentioned vertical shaft, there being a one-point separable connection between the two shafts. Means are provided for disconnecting the lamp-carrying shaft from the other vertical shaft.

Another claim of this patent describes in detail the connections which may be preferably used between the steering column and the lamp. These connections include a pair of elliptical gears which are in mesh, one of them being actuated from the steering column and having a smaller radius than the driven gear at normal position. The radius of the gear driven by the steering wheel increases progressively as it is turned, so that the lamp is first turned slowly and more rapidly on a sharp turn of the car.

No. 1,021,279—to Francis E. Thompson, Arlington, Mass. Granted March 26, 1912; filed March 2, 1911.

Alarm Signal Device—In which the sound-producing chamber has an opening for the exit of dust, grit, etc.

This patent refers to an alarm signal device containing a chamber, the walls of which are formed by several parts. One of these parts has an opening for the outward passage of sound waves, in which opening a resonator is stationed; the edge of this part is folded over that of a second part with a channel between them. A draft may be induced through this channel, from the interior to the exterior of the chamber to clean the latter from moisture, dirt, etc. In the chamber there is a diaphragm producing sound when vibrated by means provided for this end.

No. 1,020,768—to Ray H. Manson, Elyria, O., assignor to the Dean Electric Company, Elyria, O. Granted March 26, 1912; filed May 10, 1911.

Vehicle Tire—Consisting of a series of arched springs resting on the rim.

The tire construction referred to in this patent comprises a trough-shaped rim on which connecting members rest. Arched tread springs resting on the rim are united by means of links to the connecting members mentioned; these links also rest in their normal position, against the rim. The connecting members are held to the rim by means of a strap extending across them.

No. 1,021,246—to Wilhelm A. Giermann, Blencoe, Ia. Granted March 26, 1912; filed October 11, 1911.

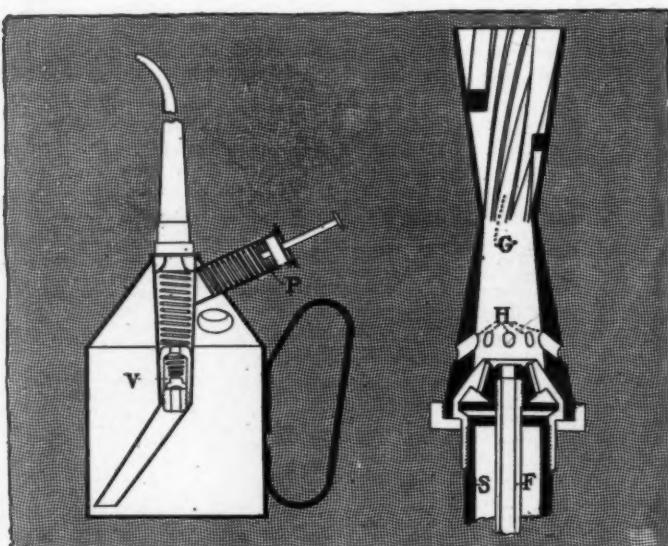


Fig. 1—Bathancourt oil-can. Fig. 2—Lawton hydrocarbon burner.

the plug opening, preventing the flow of liquid from the spout into the tube. A pump is connected with the tube, and, when operated, sucks the oil out of the receptacle into the tube and thence forces it out through the spout. A filler-hole is provided near the top of the receptacle.

No. 1,021,653—to Justimen E. Bathancourt, Houma, La. Granted March 26, 1912; filed November 11, 1911.

Hydrocarbon Burner—In which the fuel is mixed with steam by a special form of nozzle.

This invention is seen in Fig. 2, being a combination of a fuel or oil pipe, F, with a conical nozzle having a central outlet, to which the pipe is secured. A steam pipe, S, surrounding the fuel pipe is connected to the nozzle, which has a number of inwardly-inclined, circumferential passageways for the discharge of steam. A bonnet or hood united to the nozzle has a series of air holes H along its circumference; the hood or bonnet is inwardly-inclined for a portion of its length from its inner end and outwardly-inclined toward its discharge end. In the interior wall of the outwardly-inclined section there are a number of spiral grooves G designed to impart a rotary motion to the mixture passing through the nozzle.

No. 1,020,612—to Robert W. Lawton, San Francisco, Cal. Granted March 26, 1912; filed June 27, 1911.

Headlight Controller—In which a searchlight-carrying shaft is connected to and turned by the steering column directing the light in the path of the car.

The device for mounting and controlling headlights, Fig. 3, comprises a steering column to which a vertical lamp-shifting shaft is connected. A second vertical shaft carries the lamp at

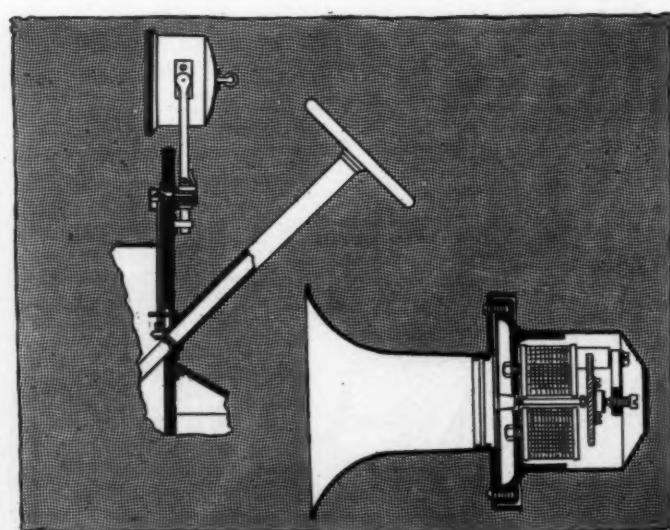


Fig. 3—Thompson headlight controller. Fig. 4—Manson signal.